$12.50

S O V I E T   A B S T R A C T S

P H Y S I C S

Book No. 3, 1960

Abstracts 5014 thru 7535
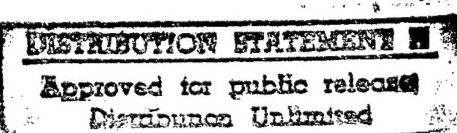
19980122 198

SELECTED TRANSLATIONS OF

ABSTRACTS IN <u>REFERATIVNYY ZHURNAL - FIZIKA</u>, No. 3, 1960

This report consists of complete translations of the Russian-language abstracts of articles, which were originally published in the Sino-Soviet bloc and in Yugoslavia, excluding the USSR.

The Soviet subject classification system used in the original Russian language abstracts has been followed in this publicatinn.

EAST GERMANY/Theoretical Physics - General Problems. B-

Author   : Ch. I. Shal'reiter
Inst   : -
Title   : The Mass of Energy, Part I.

Abstract : Using nonrelativistic examples (for example, the propagation
            of waves in gas, thermal energy), the author shows that a
            certain measure of inertia can be assigned to the flux of
            mechanical energy L, that is, a mass μ, connected with the
            velocity of this flux by the formula $L = \mu q^2$ analogous to
            the relativistic formula $E = mc^2$. -- V.P. Shinelev

Card 1/1

HUNGARY/Theoretical Physics - General Problems. B-

Author   : Ch.I. Shal'reiter
Inst   : -
Title   : The Mass of Energy, Part II.

Abstract : Considering uniform motion of an electric charge or a
            magnet in empty space the author reaches the conclusion
            that both should experience a retarding action on the
            part of the Maxwellian fields that they produce, and that
            therefore Newton's first law (the law of inertia) is vio-
            lated in these cases. All the considerations stay within
            the framework of classical electrodynamics. N.P. Shmelev

Card 1/1

Abstract   : Scientific popular article.

Card 1/1

Abstract   : For point sources of an electromagnetic field, the author
              indicates an action integral whose stationary behavior,
              when varied over the functions that describe the provision
              of the sources, leads to the equation of motion. Of parti-
              cular significance in this case is a special choice of the
              metric tensor. Specifically, if $\eta_{\alpha\beta}$ is the metric

Card 1/2

tensor of the Minkowski space and $\overset{\alpha}{\psi}$ are linear functions of the coordinates, then the unknown metric is given in the form

$$\gamma_{\mu\nu} = \eta_{\alpha\beta} \frac{\partial \psi^{\alpha}}{\partial x_{\mu}} \cdot \frac{\partial \psi^{\beta}}{\partial x}$$

Ya.I. Pugachev

Card 2/2

Author　　: Gabos Zoltan
Inst　　　: -
Title　　　: On Gravitational Potentials, I.

Abstract　　: Using the Schwarzschild metric, the author shows that a weak gravitational field can be described by a potential in the form of a 4-vector $\{A_{\alpha}, i\, \varphi_{gr}\}$

where $A_{\alpha} = (\lambda m_0 / r) x_{\alpha} + \cdots$, $\varphi_{gr} = -(\lambda m_0 c^2 / r)$
$(1 + \lambda/2r - v^2/2c^2 - \dot{r}^2 c^2) \lambda$

is the　parameter of the Schwarzschild metrie.　--
　　　　　　　　　　　　　　　　　　　　A.A. Borgardt

Card 1/1

RUMANIA/Theoretical Physics - Relativity. Unified Field Theory.   B-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5031

Author   : Gabos Zoltan
Inst   : -
Title   : On Gravitational Potnetials, II.

Orig Pub   : Studii si cercetari stiint. Acad. RPR Fil. Iasi. Fiz.
             si stiinte tehn., 1958, 9, No 2, 189-195

Abstract   : The author investigates different metrics, used to describe
             a weak gravitational field, and shows that it is possible
             to obtain from them the same expression for the 4-vector
             of gravitational potential, which he obtained from the
             first part of the investigation (abstract 5030). -- A.A.
             Borgardt

Card 1/1

EAST GERMANY/Theoretical Physics - Classical Electrodynamics.   B-
             Classical Theory of Fields.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5042

Author   : Knapecz Zeza
Inst   : -
Title   : Remarks on Weak Affine Laws of Conservation of Multimo-
             ments within the Framework of the General-Relativistic
             Covariant Lagrangian Formulism.

Orig Pub   : Ann. Phys. (DDR), 1959, 3, No 5-6, 310-344

Abstract   : Multimoments are called certain product of coordinates by
             "energy-like" quantities (energy, momentum, etc.). Making
             use of the invariance of the Lagrangian under arbitrary
             coordinate transformations, the author obtains the laws
             of conservation of multimoments in the usual manner. --
             Ya.I. Pugechev

Card 1/1

Abstract　 :　It is shown that the 15-parameter group of conformal trans-
　　　　　　 formations, which includes the 10-parameter inhomogeneous
　　　　　　 Lorentz group, the one parameter subgroup of extensions,
　　　　　　 and the 4-parameter subgroup of transformations
　　　　　　 $X^{\mu\prime} = (x^\mu - x_\nu x^\nu a^\mu)/(1 - 2a_\nu x^\nu + a_\nu a^\nu x_\rho x^\rho)$,
　　　　　　 can be obtained from the condition that in the transition
　　　　　　 to the transform coordinates the components $\sqrt{-g}\, g^{\mu\alpha} f_{\alpha}{}^{\nu 6}$
　　　　　　 $(\mu, \nu, \rho, \sigma = 0, 1, 2, 3)$

Card 1/3

do not change compared with the case when $g_{\mu\nu}$　is a
metric tensor for the Minkowski 4-space. The physical
meaning of the condition is seen by the author to lie in
the fact that if the general-relativity invariant Maxwell
equations contain an antisymmetric tensor density $H^{\mu\nu}$,
and the general invariant equations of motions contain an
antisymmetrical tensor $B_{\rho\sigma}$ expressed in terms of the
4-potential, then there should be separated such a subgroup
of general transformations of 4-coordinates, that the
relation between $H^{\mu\nu}$　and $B_{\rho\sigma}$　are the same as in
the Minkowski space. It is shown that relativistic equa-
tions of motion for a classical particle can be written
in conformal-invariant form, provided the rest mass of the
particle if transformed in conformal transformation as a

Card 2/3

EAST GERMANY/Theoretical Physics - Classical Electrodynamics.   B-
                    Classical Theory of Fields.

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5043

quantity reciprocal to the length (that is, if the mass
has a conformal weight of -1).   -- G.A. Zaytsev

Card 3/3

EAST GERMANY/Theoretical Physics - Quantum Electrodynamics.   B-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5062

Author   :   Henneberger Walter C.

Inst   :   The University, Gottingen West Germany

Title   :   Exact Solutions for the Dipole Radiation of a Harmonic
                Oscillator

Orig Pub   :   Z. Phys., 1959, 155, No 3, 296-213

Abstract   :   A harmonic oscillator radiating an electromagnetic field
                is investigated in the dipole approximation. Perturbation
                theory is not used in the calculations. The author uses
                Van Kampen's results of the canonical transformation (Van
                Kampon, N.G. Kgl. danske vid selskab Mat. fys. medd., No
                15, 1951, 26, which were improved by Steinwedel (RZhFiz,
                1956 No 7, 18871). The electromagnetic field appears not
                as a perturbation, but as a result of a further change in

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5062

the system with specified initial conditions. The fre-
quency distribution of this field is determined asymp-
totically (as $t \to \infty$) by a superposition of wave
functions of the initial state. The natural line width
of the spectrum is found, and is independent of the num-
ber of the excited state. Simultaneous emission of more
than one photon is forbidden. The previously-known re-
sults concerning the conservation of the form of the wave
packet are confirmed. The formula showing the decrease
with time of the mean square the coordinates of the quan-
tum oscillator coincides with the classical solution ob-
tained there. -- V.P. Shmelev

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5068

Author   : Marx Gyorgy
Inst   : -
Title   : Fundamental Theorem of Continuous Transformations in
               Quantum Theory

Orig Pub   : Magyar tud. akad. kozp fiz. kutato int. kozl., 1958, 6,
               No 5, 397-407, VII

Abstract   : Starting out with the field equations and the commutation
               relations, the author constructs a unitary operator,
               which is the generating function of symmetry transfor-
               mations in Hilbert space. The sequency of the author's
               arguments is the opposite of that used by Schwinger in
               the covariant formulation of quantum theory: this elimi-
               nates certain inconsistancies in the preceeding analysis.

Card 1/1

POLAND/Theoretical Physics - Quantum theory of Fields.   B-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5069

Author   : Bialynicki - Birula I.
Inst   : -
Title   : On the Internal Degrees of Freedom of Particles in
               Quantum Theory

Orig Pub   : Acta phys. polon., 1958, 17, No 2-3, 158-176

Abstract   : Definitions are given for the polarization and magnetic
               moment operators in quantum field theory, and equations
               are also obtained for the variation of these operators
               with time in the case of interacting fields.
               See also RZhFiz 1958, No 11, 24462-24464.

Card 1/1

BULGARIA/Theoretical Physics - Quantum Theory of Fields.   B-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5070

Author   : Mitskevich, N.V.

Inst   : Uzbek University, Samarkand

Title   : Interaction Between Fields and Quantum Relations

Orig Pub   : Dokl. Bolg. AN, 1958, 11, No 5, 367-370

Abstract   : It is shown in which manner the energy-momentum tensor and
               the generalized moment, introduced in an earlier paper
               (RZhFiz, 1959, No 3, 4829) can be defined uniquely in quan-
               tum theory. The method does not presuppose the absence of
               interaction or a weakened action between the fields, and
               is therefore applicable in principle for a nonlinear gra-
               vitational field, too. -- P.G. Kard

Card 1/1

Asb Jour   : Ref Zhur Fizika, No 3, 1960, 5088

Author   : Vescan Teofil T.
Inst   : -
Title   : Consideration of the Theory of Elementary Particles. C.
               Theory of Fusion of Elementary Particles and Heisenberg's
               Research on the Unified Theory of Elementary Particles.

Orig Pub   : Studii si cercetari Stiint. Acad. RPR Fil. Iasi. Fiz. si
               stiinte tehn., 1958, 9, No 2, 205-214

Abstract   : The author developes the de Broglie theory of fusion
               (de Broglie L., Theorie generale des particules a spin.
               Paris, 1943), recalling in this connection the Heisenberg
               nonlinear theory, the author emphasized that the two
               theories are related. For parts A and B, see RZhFiz
               1959, No 919614.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5089

Author   : Minardi, E.
Inst   : -
Title   : On the Bilocal Theory of the Electron

Orig Pub   : Acta phys. polon., 1958, 17, No 6, 429-433

Abstract   : The interaction between an electron and external electroma-
               gnetic field is described by an 8-dimensional spinor equa-
               tion. The wave function depends symmetrically on the or-
               dinary "external" coordinates x_ν and on the "internal
               coordinates" η_ν (ν =1, 2, 3, 4). The electromagnetic
               mass of the electrons breaks up accordingly into "external"
               and "internal" part. In calculating "internal" part with
               the aid of perturbation theory, in the initial approxima-
               tion the electron is considered as a Majorana neutrino.
               The total electomagnetic mass of the electron is found to
               be equal to the experimental one, if the universal length

Card 1/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5089

has a value $\ell = 2.3 \times 10^{-13}$ cm. At the same value of ℓ it becomes possible to obtain mass values close to experimental for other elementary particles, too. -- V.S. Barashenkov

Card 2/2

HUNGARY/Theoretical Physics - Quantum Theory of Fields.   B-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5098

Author   : Gyorgyi Zeza
Inst   : -
Title   : Bound States in Paired Meson Theory (the NK Model of the
             Hyperon)

Orig Pub : Magzar tud. akad. kozp. fiz. kutato int. kozl., 1958, 6,
             No 5, 373-379, $\bar{\underline{V}}$

Abstract : An investigation is made of the bound states in paired
             meson theory for the case of vector interaction. Such an
             approach can be considered as a field on theoretical model
             of the hyperon (NK model).

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5114

Author   : Toth Teodor
Inst   : -
Title   : New Principles of Acceleration of Charged Particles.

Orig Pub   : Automat. si electron., 1959, 3, No 2, 80-84

Abstract   : The author describes "coherent" methods of accelerating
              particles to large energies, including acceleration by
              means of moving media, shock waves, and electromagnetic
              waves.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5116

Author   : Cilenseh Edvard

Inst   : Institute Josev Stefan, Ljubljana, Yugoslavia

Title   : Electrostatic Accelerator of the Institute "Jozef Stefan"
              In Ljubljana.

Orig Pub   : Elektrotekn. vesn., 1958, 12, No 5-6, 187-192

Abstract   : After a short survey of existing accelerators and a detailed
              exposition of the principle of operation and technical im-
              provement in belt-type electrostatic generators (ESG), the
              author describes a two-Mev electrostatic accelerator, cons-
              tructed under the leadership of the author in 1953 -- 1957
              in the Institute "Jozef Stefan" in Ljubljana (Yugoslavia).
              The accelerator operates in compressed nitrogen at a

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5116

            pressure of 10 atm. The diameter of the high voltage
            electron of the ESG is 1.1 meter, the height of the in-
            sulating columns is 1.6 meters. The tank of the accele-
            rator has a diameter of 1.8 mm and a height of 4 meters.
            The injector employed is a high frequency iron source.
            The accelerating tube is glued together from porcelain
            rings, between which are inserted aluminum electrodes.
            The high tension is uniformly distributed between these
            electrodes. A cotton belt 55 cm wide is set into motion
            by two electric motors 3.3 kw each, located on both sides
            of the lower driving shaft. The rate of motion of the
            belt is 19 meters per second. The voltage on the dischar-
            ge brush is varied from 10 to 40 kv, depending on the pres-
            sure of the nitrogen in the tank. The accelerated beam can
            be focused on the target for any accelerated voltage from
            200 kv to 2.3 Mv.

Card 2/2

CHINA/Nuclear Physics - Installations and Instruments.   C-
            Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5117

Author   : -
Inst   : -
Title   : Van de Graaff Generator for the Acceleration of Electrons
              to 2 Mev.

Orig Pub   : Uli tunbao, Huli tongbao. 1959, No 3, 109-111

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizik , No 3, 1960, 5142

Author   : Slivnih, J., Zemljii, A.
Inst   : -
Title   : Preparation of Uranium Samples for Mass Spectrometric
              Analysis

Orig Pub   : Repts. ll J. Stefan 77 Inst., 1958, 5, 49-51

Abstract   : The authors describe a setup for the preparation of samples
              of UF_6, intended for mass spectrometric isotopic analysis.
              The setup consists of the following basic parts: generator
              of elementary fluorine, reaction tube, and traps. The
              generator represents an electrolytic cell with electrolyte
              $KF.2HF$; the F_2 is directed to the reaction tube, heated
              to 540° C. At this temperature the fluoridation reaction
              terminates after ten minutes. The UF_6 produced condenses
              in the trap, which is cooled with dry ice. To prepare

Card 1/2

Abs Jour   : Ref Zhur Biol., No 3, 1960, 5142

80 mg of UF_6 approximately one hour is necessary. The
changeover of uranium to UF_6 amounts to approximately
92%. Ye. L. Frankevich

Card 2/2

YUGOSLAVIA/Nuclear Physics - Installations and Instruments.   C-
            Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5143

Author   : Debenec L. Kramer, V., Marsel, J., Vrscaj, V.
Inst   : -
Title   : Mass Spectrometric Measurements of UF_6

Orig Pub   : Repts. LL J. Stefan 77 Inst., 1958, 5, 33-39

Abstract   : A Nier-type 60° mass spectrometer with a resolution of
              350 was used to measure the isotopic ratio $U238/U235$ when
              UF_6 is introduced into the instrument. The UF_6 can be in-
              troduced in a viscous stream through two capillaries, from
              vessles located in a thermostatic bath. One vessel con-
              tains UF_6 with natural contents of isotopes. The measure-
              ment of the isotopic ratio was carried out by comparing
              the intensity of the mass lines 330 and 383 in multiple
              magnetic or electric scanning. For exact measurements of
              small differences in the isotopic ratios of two specimens,

Card 1/2

YUGOSLAVIA/Nuclear Physics - Installations and Instruments.   C-
            Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5143

              use was made of the method of successive inlet of the
              samples. The "memory" effect of the instrument to old,
              previously admitted samples, was investigated. It is
              shown that in the case of a small difference in the
              isotopic ratios of the specimen, it is enough to stop the
              apparatus for two minutes for evacuation between measure-
              ments. It is established that the isotopic ratio $U238/$
              $U235$ in natural uranium is 138.2 $\pm$ 0.4. Ye.L. Frankevich

Card 2/2

BULGARIA/Nuclear Physics - Installations and Instruments.   C-
         Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5147

Author   : Mitrani L., Betev B.
Inst   : -
Title   : Trigger Feeding of a Couple of Geiger-Muller Counters

Orig Pub   : Kokl. Bolg. AN, 1958, 11, No 5, 363-366

Abstract   : A method is proposed for connecting two Geiger-Muller coun-
              ters in such a way as to reduce considerably the depth
              time of the system. The filaments of both G-M counters
              are connected to anodes of the tubes of the multivibrator
              with two stable states. On the cathodes of the counters
              is applied a negative potential. The parameters of the
              circuits are chosen to satisfy the condition that the vol-
              tage on the counter, connected to the anode of the cut-off
              tube of the multivibrator, lies within the Geiger region,
              whereas the voltage on the counter connected to the anode

Card 1/2

BULGARIA/Nuclear Physics - Installations and Instruments.   C-
         Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5147

              of the conducting tube of the multivibrator is lower than
              the Geiger region. The pulse in the first counter causes
              operation of the multivibrator, which simultaneously re-
              duces the voltage on the first counter, below the Geiger
              region (quenching of the discharge), and establishes the
              working voltage on the second counter. Thus the use of
              such a circuit is practically equivalent to pulsed-feeding
              of Geiger-Muller counters, and the frequency of the pulse-
              feeding is varied automatically with intensity of the
              measured radiation. The number of registered pulses is
              independent of the duty-cycle coefficient. An additional
              advantage of such a system is that it serves simultaneous-
              ly as a scaler circuit. Working parameters of a circuit
              are given, intended for use with STS-5 counters.

Card 2/2

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments.   C-
                    Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5149

Author   : Hebek Antonin
Inst   : -
Title   : Effect of Liquid Vapor on Pointed Geiger-Muller Counters

Orig Pub   : Chekhosl. fiz. zh., 1959, 9, No 1, 127-128

Abstract   : No abstract.

Card 1/1

HUNGARY/Nuclear Physics - Installations and Instruments.   C-
                    Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5152

Author   : Mathe Gyorgy
Inst   : -
Title   : Broad-band Scintillation Gamma Spectrometer for Relative
               Measurements

Orig Pub   : Magyar fiz. falyoirat, 1959, 7, No 2, 129-137

Abstract   : No abstract.

Card 1/1

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments.   C-
           Methods of Measurement and Research

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5155

Author   : Silar Josef, Smola Jaroslav
Inst   : -
Title   : Scintillation Probe with Large Surface for the Registration
             of Particles

Orig Pub   : Jaderna energie, 1959, 5, No 4, 124-128

Abstract   : Measurements were made of the parameter of a long light
             pipe made of organic glass. The pulse distribution at the
             output of the scintillation probe was measured. Using
             a 61RK41 photomultiplier, the authors have determined the
             basic parameters of the counter, namely the plateau, the
             characteristics, and the background.

Card 1/1

EAST GERMANY/Nuclear Physics - Installations and Instruments.   C-
           Methods of Measurement and Research

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5187

Author   : Thielemann, F.

Inst   : Institute of Applied Radioactivity, Leipzig, East Germany

Title   : Method of Preparation of Radioactive Isotope. I.

Orig Pub   : Kernenergie, 1959, 2, No 4, 320-324

Abstract   : A detailed description is given of a procedure for prepar-
             ing radioactive isotopes, in the form of a uniform disper-
             sed mixture of radioactive isotopes and plastic. In the
             preparation of the sources, the radioactive substance can
             be used both in solid form and in solutions. The thickness
             of the sources ranges from 0.1 microns to several milli-
             meters. The contents of the radioactive substance in the
             plastic can reach 80% by weight. The plastics used can be

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5187

               polyvinyl, plexiglas, polyamides, and many others.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5195

Author   : Klumpar Josef, Majerova Miroslava, Jirouseh Panel

Inst   : Dosimetricke oddeleni UJV-CSAV, Prague, Czechoslovakia

Title   : Dosimetry of Radioactive Isotopes Using a 4π-Counter and
          Comparison of the Results Obtained with Measurements made
          with a G-M Counter

Orig Pub : Jaderna energie, 1959, 5, No 6, 190-193

Abstract   : The authors describe the construction and give the basic
          parameters of a flow-through 4π-counter, intended for the
          measurement of radioactive isotopes. The counter consists
          of two chambers, with individual anodes. Both chambers
          are separated by a thin liner, on which is deposited the
          measured radioactive compound. The anodes of the counter

Card 1/2

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments.   C-
            Methods of Measurement and Research

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5195

            are made of tungsten wire 0.05 mm in diameter. A brief
            description is given of the influence of the liner on the
            results of the measurements of the activity of the com-
            pounds with different β-spectrum energy. The results
            of the measurements are compared with the data obtained
            with the aid of a GM counter with thin window. An ana-
            lysis of the measurement errors is made.

Card 2/2

HUNGARY/Nuclear Physics - Installations and Instruments.   C-
            Methods of Measurement and Research.

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5202

Author   :   Tihanyi Laszlo
Inst   :   -
Title   :   Calculation of Shielding Against γ - Radiation

Orig Pub   :   Energie es atomtechn., 1959, 12, No 1, 7-12

Abstract   :   Curves have been worked out for a rapid determination of
                the dimensions of the protective shield.

Card 1/1

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments.   C-
                  Methods of Research and Measurement.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5206 .

Author   : Heber Milos
Inst   : -
Title   : Radiochemical Laboratories for Work with High Activities

Orig Pub   : Jaderna energie, 1959, 5, No 6, 184-189

Abstract   : A survey is given of materials on the equipment of radio-
              chemical laboratories, as presented at the Second Interna-
              tional Conference on Peaceful Use of Atomic Energy.

Card 1/1

CHINA/Nuclear Physics - Installations and Instruments.   C-
               Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5208

Author   : Ho Zah-wei, Lou Tsu-yenz, Sun Hantcheng

Inst   : Institute of Atomic Energy Research, Academy : Sinica
              China

Title   : On the Preparation of Nuclear Emulsions N-2 and N-3

Orig Pub   : Uli synebao, Acta phys. sinica, 1959, 15, No 3, 131-138

Abstract   : The work concerns certain questions connected with the
              process of preparation of nuclear emulsions, which are
              sensitive to ionization produced by protons. The regula-
              tion of the concentration of the bromine ions during the
              time of preparation of the emulsion has made it possible
              to obtain silver-bromine grams which are homogeneous in
              size. To increase the sensitivity, the optimal conditions

Card 1/2

of preparation have been chosen, and the sensitizer -
triethanolamine - is introduced directly before pouring.
The regression of the latent image is adding to the fini-
shed emulsion gold salts. To improve the transparency
of the emulsion, purified gelatin is used. At the present
time it is possible to obtain nuclear emulsions with
uniform properties, sensitive to ionization produced by
protons. In their characteristics, these emulsions are
similar to "Ilford C-2" used in nuclear research.

Card 2/2

CHINA/Nuclear Physics - Installations and Instruments.   C-
          Methods of Measurement and Research.

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5209

Author   :   Lou Isu-yeng, Sun Han-tcheng, Leu Hei-tchang, Ho Zah-wei

Inst   :   Institute of Atomic Energy Research, Academy Sinica, China

Title   :   Methods of Preparation and Characteristics of Nuclear
                Emulsions.

Orig Pub   :   Uli synebao, Acta phys. sinica, 1959, 15, No 3, 139-144

Abstract   :   Data are reported on certain nuclear emulsions, which can
                be prepared by simple laboratory methods. The characteris-
                tics of these emulsions are compared with the characteris-
                tics of the Ilford nuclear emulsions. The properties of
                proton-sensitive emulsions N-2 and N-3 are approximately
                the same as the properties of Ilford C-2. The N-2 nuclear
                emulsions, which contain bromine or lithium and which are

Card 1/2

CHINA/Nuclear Physics   - Installations and Instruments.   C-
          Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5209

          intended for the registration of thermal neutrons, apparent-
          ly have better properties than the Ilford C-2 emulsions
          containing bromine or lithium. The sensitivity of the
          electron-sensitive emulsion N-4 is of the same order as
          that of the emulsion "NIKFI R" and Ilford G-5. The proper-
          ties of supersensitive electron-sensitive emulsion N-5 are
          discussed.

Card 2/2

CHINA/Nuclear Physics - Installations and Instruments.   C-
          Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5214

Author   : Khe Pin
Inst   : -
Title   : Methods of Enriching U^{235}

Orig Pub   : Kesyne tunbao, Nauchn. vestn., Scientia, 1959, No 2, 36-41

Abstract   : No abstract.

Card 1/1

RUMANIA/Nuclear Physics - Installations and Instruments.   C-
          Methods of Measurement and Research.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5217

Author   : Beslui E., Pestrascu M.G.
Inst   : -
Title   : Determination of the Nuclear Charge from the Number of δ
              Electrons

Orig Pub   : Studii si cercetari fiz., 1959, 10, No 1, 37-45

Abstract   : A procedure is described for determining the charge of
              light nuclei by the number of δ electrons, formed by
              them upon passage through nuclear emulsion. The calcula-
              tion formulas are given.

Card 1/1

EAST GERMANY/Nuclear Physics - Elementary Particles.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5227

Author   : Kessler Jsachim

Inst   : Physics Institute, Technical College, Karlsruhe, West
              Germany

Title   : Single Scattering of Electrons of Medium Energies by Nuclei
              of Heavy Elements.

Orig Pub   : Z. Phys., 1959, 155, No 3, 350-367

Abstract   : The Mott theory of Coulomb scattering of electrons and
              certain experimental results are in contradiction. In
              the present paper to investigate this problem a new ex-
              perimental method is used: electrons with 150 kev energy
              are scattered not by 4, but in a low-pressure gas. To
              accumulate sufficient statistical material, instead of the
              small thickness of the target, a ring counter was used, in

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5227

which all the results were integrated over the azimuth angle. The scattering in the gas target has that substantial advantage, that corrections for multiple scattering are negligibly small. The basic experimental difficulty consists of the need for total exclusion of the electrons that are scattered backward from the chamber walls. The relative magnitude of the cross sections was determined at angles of 60, 90, 120 and 135° for elements with atomic numbers 36, 54, and 80. The results of the experiments, within the limits of experimental accuracy ($\pm$ 5%), agree with Mott's theory.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5252

Author   : Derado, I., Lutjens, G., Schmitz, N.

Inst   : Max Planck Institute of Physics and Astrophysics, Munich, West Germany

Title   : On the Interpretation of Photographs Obtained with the Aid of a Bubble Chamber, and Results of Experiments on the Scattering of Pions by Protons.

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 103-120

Abstract   : A numerical method of analysis of elastic and inelastic scatterings of pions with momenta 1.14 Bev/c by protons in a bubble chamber is described. To exclude the phenomena which are characterized by short tracks, for which the analysis is difficult or impossible, two criteria were used. For each measured phenomenon one calculates the

Card 1/3

correction factor in order that no systematic error be
introduced as a result of the indicated selection. With
the aid of an electronic computer, the geometric and
kinematical characteristics of the phenomena were calcula-
ted from the coordinates of several bubbles on each track
and from the deflection of the tracks of the secondary
particles in a magnetic field. For the great part it was
possible to establish whether the scattering is elastic or
inelastic, and when it was found inelastic with production
of a single pion, it was possible to establish whether the
produced pion is positively charged or neutral. In those
cases when in an inelastic scattering it was impossible to
establish from kinematic considerations the polarity of
the pion, the density of the δ particles was used for
this purpose. On the basis of the measurement results,
the total cross sections of different negative-pion --
proton scatterings were calculated. The momentum

Card 2/3

distributions of secondary particles of both reactions
$\pi^- + P \to \pi^- + P + \pi^0$ and $\pi^- + P \to \pi^- + P \to \pi^- + n + \pi^+$
were calculated in the center-of-mass system.

Card 3/3

POLAND/Nuclear Physics - Elementary Particles.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5277

Author   : Zielinski Przemyslaw
Inst   : -
Title   : Hyperfragments -- Review of Certain Theoretical Problems

Orig Pub   : Pastepy fiz., 1959, 10, No 3, 341-361

Abstract   : Survey article. Bibliography, more than 130 titles.

Card 1/1

EAST GERMANY/Nuclear Physics - Elementary Particles.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5283

Author   : Stech Berthald, Kramer Gustav

Inst   : The University, Heidelberg, West Germany

Title   : γ_5-Invariance and Strong Interactions

Orig Pub   : Z. Phys., 1959, 154, No 1, 128-132

Abstract   : In a preceding paper (Abstract 5282 -- Physical Review
               Letters, 1959, Vol. 2, No 2, 63-64) there were obtained
               certain corollaries of a generalized γ_5-invariance for
               strong interactions, proposed by one of the authors. In
               the present paper a detailed deduction and discussion of
               these corollaries is given. For interactions between
               pions and bariums, two possible types of couplings are
               obtained. 1. The coupling is determined by the total
               current vector in isotopic space, and does not contain a

Card 1/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5283

direct $\wedge \leqslant \pi$ coupling; strong parity conservation is
insured here even in the presence of an electromagnetic
and isotopically-invariant K-meson interaction. 2. There
exists a direct pion-barium interaction in the presence
of global symmetry, i.e., a $\wedge \leqslant \pi$ coupling. In this
case the pion-interactions retain their parity strictly,
provided only one can neglect the asymmetrical K-meson
couplings. The k-meson couplings in themselves can violate
the invariance under spatial reflections.

Card 2/2

EAST GERMANY/Nuclear Physics - Elementary Particles.   C-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5284

Author   : Kramer, G., Pollnik, H., Stech, B.

Inst   : The University, Heidelberg, West Germany

Title   : $_5$-Invariance and Parity Conservation in Strong Inter-
             actions.

Orig Pub : Z. Phys., 1959, 154, No 5, 564-568

Abstract : The authors investigate the question of whether strong
             interactions can be written in a form that is invariant
             under the transformation $\psi \rightarrow \gamma_5 \psi$ so as not to violate
             parity conservation. The interaction between pions and
             nucleons is considered, and is taken in the form

             $$L_w = (f/m)\bar{\Psi} i \gamma_\mu (1+\gamma_5) T \psi \cdot \partial \phi / \partial x_\mu \tag{1}$$

Card 1/3

- 27 -

and the operator of isotopic spin T is chosen such (dependent on Φ) that L_W be invariant under reflection. In the case of neutral theory it is not enough to take T =1 for this purpose, since the neutral scalar mesons with vector coupling cannot in general be transformed from the Lagrangian. In symmetrical theory one must put

$$T = \tfrac{1}{2}\left(\tau + (f/m)[\Phi\,\tau]\right) / [1 + (f/m)^2\,\Phi^2]$$

(τ is the ordinary operator of isotopic spin). It is shown that in this form of the operator T, the Lagrangian of the interaction can be transformed, with the aid of the canonical transformation $\psi = U\psi'$, $\Phi = \Phi'$, to a Lagrangian which is nonlinear in Φ, and which retains the parity; Here Φ describes the wave field of the pseudo-scalar mesons. The question of the quantization

Card 2/3

and commutation rules for the functions ψ' is not discussed. -- B.L. Ioffe

Card 3/3

EAST GERMANY/Nuclear Physics - Elementary Particles.   C-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5302

Author   : Burmeister, J., Lanius, K., Meier, H.W.

Inst   : Nuclear Physics Institute, German Academy of Sciences,
             East Germany

Title   : On the Interpretation of Nucleon-Nucleon Interactions
             at High Energies on the Basis of the Two-Center Model

Orig Pub : Monatsber. Dtseh. Akad. Wiss. Berlin, 1959, 1, No 3,
             160-164

Abstract : Further details are considered of the model of two excited
             nucleons, investigated by the authors in an earlier paper
             (Referat Zhur Fizika 1960, No 1, 588). It is shown that
             if the meson spectrum in the decay of an excited center is
             described by the Heisenberg theory in the rest system of
             the center, then the average meson energy (in the same

Card 1/2

EAST GERMANY/Nuclear Physics - Elementary Particles.   C-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5302

             system) depends little on the number of cascade particles.
             Finally, the dependence of the number of shower particles
             on the number of cascade particles on the coefficient of
             inelasticity and on the energy is close in this model to
             the corresponding dependence in the Koba theory. -- A.I.
             Nikishov

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5329

Author   : Dav"dov, A.S., Filippov, S.F.

Inst   : Moscow State University.

Title   : Collective Excited States of Even-Even Atomic Nuclei

Orig Pub   : Acta phys. Acad. scient. hung., 1958, 9, No 1-2, 169-
              176

Abstract   : The energy of collective excited states is calculated under
              the assumption that the nuclei have an axial symmetry.
              Conditions are obtained under which the collective excita-
              tions can be separated into rotational and vibrationa.
              See also Referat Zhur Fizika, 1958, No 6, 12634 .

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5336

Author   : Mei Chzhin' yue
Inst   : -
Title   : Latest Progress in the Field of β -Decay Research

Orig Pub   : Kesyue tunbao, Kekhue tongbao, Scientia, Nauchn. vestn,
              1959, No 8, 248-250

Abstract   : No abstract.

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5347

Author   : Keszthelyi Lajos, Zimanyi Jozsef.
Inst   : -
Title   : Polarization of β Particles in the Decay of Li^8.

Orig Pub : Magyar tud. akad. Kozp. fiz. kutato int, kozl., 1958, 6,
             No 5, 358-360, $\underline{IV}$ - $\underline{V}$

Abstract : The circular polarization of bremsstrahlung of electrons
             in the decay of Li^8 is measured. By determining the po-
             larization of the β particles from the polarization of
             the bremsstrahlung and by comparing the results with
             those of Lauterung et al. (Referat Zhur Fizika, 1958,
             No 17, 24701) on the angular $\beta - \widetilde{\nu}$ corellation, the au-
             thors reach the conclusion that the spin of the anti-
             neutrino, arising in the β decay of Li^8, is parallel to
             its momentum. The results obtained is in agreement with
             the Goldhaber result (Referat zhur Fizika, No 7, 1959,
                              14900). V. Lend'yel

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5369

Author   : Hoffman, K.W., Krause, I.Y., Schmidt Ott H.D., Flammersfeld
             A.

Inst   : The University, Gottingen, West Germany

Title   : Isomerism of Hf^{179}

Orig Pub : Z. Phys., 1959, 154, No 4, 408-418

Abstract : Using a scintillation spectrometers with a 4π geometry,
             the authors measured the spectrum of γ rays and conver-
             sion electrons of the 19-second isomer of Hf. The newly
             measured half life was found to be 18.6 ± 0.2 seconds.
             Starting with the measured spectra, it was possible to
             determine, along with the energies, also the conversion
             coefficients of both transitions. For the first transi-
             tion with energy 161 kev, the total conversion coefficient

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5369

is $\alpha = 35 \pm 2$, and the coefficient of K conversion $\alpha_K = 19.4 \pm 1.2$, and it is in good agreement with the values calculated for the type M-3 transition. The energy of the second transition was found to be 217 ± 2 kev, and the total conversion coefficient $\alpha = 0.055$ 0.010. In spite of the assumption prevalent heretofore, it follows uniquely from these results that in this transition the emitted radiation is of type El. Thus. the spin and parity of the ground state and of the excited states of Hf^{179} are in agreement with the sequence of levels for deformed nuclei, given by Nilsson.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5389

Author   : Brix, P., Maschke, E.K.

Inst   : The University, Heidelberg, West Germany

Title   : Investigation of the Reaction $O^{16}(\gamma, p)$ Caused by Bremmstrahlung with Maximum Energy of 32 Mev.

Orig Pub   : Z. Phys., 1959, 155, No 1, 109-119

Abstract   : Measurements have been made of the energy and angular distributions of photoprotons, arising in the $O^{16}(\gamma,p)$ reaction when a gas target is irradiated with bremsstrahlung with a maximum energy of 32 Mev. The protons were registered by nuclear emulsions Ilford C2, and protons were selected with energies $E_p > 10$ Mev. The energy distribution of the photoprotons has a maximum of $E_p = 11.2$ Mev, corresponding to resonance in the absorption cross

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5889

section at $E = 24$ Mev. The angular distributions of
photoprotons, measured at a maximum spectrum energy of
28 Mev in the interval from 20^{0} to 160^{0}, are given by
the formula $A + B \sin^2 \Theta (1 + p \cos \Theta)^2$, and if $A/B = $
0.15 and $p = 0.52 \pm 0.07$ for all protons with $E_p > 10$ Mev,
then for the individual groups of protons, these quanti-
ties increase with increasing E_p (for $E_p = 10.9$ to 11.2
Mev, $A/B = 0.11$, $p = 0.5 \pm 0.3$; for $E_p = 11.4$ to 11.6 Mev,
$A/B = 0.16$ and $p = 0.4 \pm 0.3$; For $E_p = 14.4$ to 15.5 Mev,
$A/B = 1.0$ and $p = 1.9 \pm 1.3$). The partial cross section
of the reaction (γ,p) with formation of N^{15} in the
ground state, calculated for $E_\gamma = 28$ Mev from the ob-
tained spectrum by averaging over the 1.2 Mev interval,
was found to be 2.1 millibarn $\pm 25\%$. -- B.A. Yur'yev

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5391

Author   : Brix, P., Kording, A., Lindenberger, K.H.

Inst   : The University, Heidelberg, West Germany

Title   : The Reactions (γ,p) and (γ,np) on Ar^{40}

Orig Pub   : Z. Phys., 1959, 154, No 5, 569-573

Abstract   : To measure the yields of the reactions (γ,p) and (γ,np)
on Ar^{40}, the gaseous argon was irradiated by γ bremsstrah-
lung from the betatron, with maximum energy 34 Mev. The
induced β activity of Cl^{39}($T = 55.5$ minutes) and Cl^{38}
($T = 37.3$ minutes), separated chemically, was measured in
a 2π-geometry. The monitor was the induced β activity
of C^{11} from the reaction C^{12}(γ,n). Using the resultant
ratios of the yields of Cl^{39} and Cl^{38} to the yield of C^{11},
and also using data on the cross section of C^{12}(γ,n)

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5391

(Referat Zhur Fizika 1956, No 1, 430), the authors have
found that the upper limit of the integrated cross sec-
tion for the (γ,p) reaction amounts to 160 Mev-barn,
and for the reaction (γ,np) it is equal to 35 Mev-
millibarn. The results for Ar^{40}(γ,p) are sharp disa-
greement with the data of McPhearson, Pederson, and
Katz (Referat Zhur Fizka, 1955, No 6, 10999), since the
former amount to less than 1/3 of the latter. -- B.A.
Yur'yev

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5410

Author   : Zamjatnin, J.S., Safina, I.V., Gutnikova, E.K., Ivanova,
             N.I.

Inst   : Spectra of Neutrons Produced Upon Passage of 14-Mev
             Neutrons Through Layers of Fissionable Substances

Orig Pub   : Kernessergie, 1959, 2, No 5, 483-486

Abstract   : Translation for from the Journal "Atomnaya energiya"
             [Atomic Energy] 1958, 4, No 4, 337 (Referat Zhur Fizika,
             1959, No 1, 463).

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5411

Author   : Vladimirskij, V.V., Panov, A.A., Radhevic, I.A.,
               Sokolovskiy, V.V.
Inst   : -
Title   : Measurement of the Fission Cross Section of U^{233} and the
               Total Effective Cross Sections of As, V, Ta and Bi.

Orig Pub   : Kermenergie, 1959, 2, No 6, 589-590

Abstract   : Translated from the Journal Atomnaya energiya /Atomic
               Energy/ 1958, 5, No 1, 69 (Referat Zhur Fizika, 1959,
               No 4, 7669).

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5430

Author   : Kuznecova, M.J., Mechedov, V.N., Chalkin, V.A.
Inst   : -
Title   : Secondary Nuclear Reactions in the Bombardment of Tin
               by Fast Protons

Orig Pub   : Kernenergie, 1959, 2, No 5, 460-464

Abstract   : Translated from the Journal Atomnaya energiya /Atomic
               Energy/ 1958, 4, No 5, 455 (Referat Zhur Fizika, 1958,
               No 12, 26987).

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5432

Author   : Bozohi Gyorgy, Fenyves Erwin, Gombosi Eva
Inst   : -
Title   : Investigations of the Interactions Due to 9-Bev Protons
               in Photoemulsion

Orig Pub   : Magyar tud. akad. kozp. fiz. kutato int. kozl., 1958,
               6, No 5, 351-357, $\underline{\text{IV}}$

Abstract   : A prcocedure is developed for determining the number of
               nucleons, ν , knocked out of a nucleus as a result of
               nuclear interaction with 9-Bev protons. The correlation
               between ν and the number of emitted cascade particles
               and between ν and the number of evaporated particles was
               investigated. The results obtained are evidence of the
               existance of such a correlation. -- V.I. Lend'yel

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5452

Author   : Rossi Bruno
Inst   : -
Title   : Properties of Cosmic Ray Penetrating Particles at Sea
               Level

Orig Pub   : Magyar fiz. folyoirat, 1959, 7, No 1, 89-101

Abstract   : Translated from Z. Phys. 1933, 82, 151-178.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5478

Author   : Miklzic, U., Zupancic, C.
Inst   : -
Title   : Measurement of the Bremsstrahlung Spectrum from a 30-Mev
              Betatron with a Compton Electron Spectrometer

Orig Pub   : Repts.   J. Stefan   Inst., 1958, 5, 3-8

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5485

Author   : Muhlschlegel, B.

Inst   : The University, Heidelberg, West Germany

Title   : Depolarization of β Particles Due to Scattering in
              Radioactive Compound

Orig Pub   : Z/ Phys., 1959, 155, No 1, 69-76

Abstract   : The depolarization of   particles, due to scattering in
              a source, is considered. The value of the depolarization
              is calculated for the case of multiple scattering at small
              angles. The mean square of the scattering angle $\overline{\Theta\, 0^2}$
              for a fixed source thickness is calculated on the basis
              of the Moliere theory (Moliere G., Z. Naturforsch 1948,
              3a, 78). The relative depolarization in this case is
              found to be $\Delta P/P_0 = \left[(1-\beta^2)/4\right]\overline{\Theta}^2_0\,(a)$.

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5485

          For the usually employed thicknesses of sources, the
          value of the depolarization due to multiple scattering
          is found to be on the order of several percent. The
          estimate of the depolarization, due to single scattering
          at large angles, gives a magnitude of the same order as
          the considered multiple scattering. -- V.P. Parfenova

Card 2/2

EAST GERMANY/Nuclear Physics - Cosmic Rays.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5491

Author   : Marcuh, G.I., Michajlus, F.F.
Inst   : -
Title   : Resonant Absorption of Neutrons in an Infinite Homogeneous
              Medium

Orig Pub   : Kernenergie, 1959, 2, No 3, 220-228

Abstract   : Translation from the Journal "Atomnaya energiya" /Atomic
              Energy/ 1958, 4, No 6, 520.
              See Referat Zhur Fizika, 1959, No 2, 2890.

Card 1/1

EAST GERMANY/Nuclear Physics - Nuclear Power and Technology.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5514

Author   : Korolev, V.V., Sidorova, I.I.
Inst   : -
Title   : Electric Simulation of Nuclear Reactors.

Orig Pub   : Kernenergie, 1959, No 5, 464-475

Abstract   : Translated from the Journal "Atomnaya energiya" / Atomic
              Energy / 1958, 5, No 1, 29 (Referat Zhur Fizika, 1959,
              No 4, 7766).

Card 1/1

EAST GERMANY/Nuclear Physics - Nuclear Power and Tehhnology.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5516

Author   : Kovanic, P., Kulka, M.
Inst   : -
Title   : Complex Automatization of Reactor Control.

Orig Pub   : Kernenergie, 1959, 2, No 5, 476-481

Abstract   : Translated from the Journal "Atomnaya energiya" /Atomic
              Energy/ 1958, 5, No 4, 403 (Referat Zhur Fizika, 1959,
              No 8, 17524).

Card 1/1

EAST GERMANY/Nuclear Physics - Nuclear Power and Technology.   C-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5555

Author   : Kurcatov, I.V.
Inst   : -
Title   : Certain Activities of the Institute of Atomic Energy
               Academy of Sciences USSR on Controllable Thermonuclear
               Reactions.

Orig Pub   : Kernenergie, 1959, 2, No 5, 435-441

Abstract   : See Referat Zhur Fizika, 1959, No 4, 7689.

Card 1/1

POLAND/Atomic and Molecular Physics - Statistical Physics.   D-
            Thermodynamics.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5587

Author   : Olszuvski, S.

Inst   : Institute of Physical Chemistry, Polish Academy of
               Sciences, Warsaw

Title   : Nuclear Charge Effect on the Free-Electron Model Energy
               States

Orig Pub   : Acta phys. polon., 1959, 18, No 2, 107-120

Abstract   : A computation scheme is proposed, which makes it possible
               to take into account the effect of positive charges on the
               energy states in the linear metallic model. The specific
               calculations are carried out for ethylene and butadiene
               under the assumption of equidistant placement of the posi-
               tive centers along the axis of the potential tube, as the

Card 1/2

POLAND/Atomic and Molecular Physics - Statistical Physics.   D-
        Thermodynamics.

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5587

            Radius of the latter tends to zero. The results obtained
            for the lowest excited singlet states are in good agree-
            ment with the calculations corresponding to the states by
            the LCAO MO method, if a strong screening of the nucleus
            is aasumed. The scheme proposed is applicable also to the
            calculation of the position of the absorption maximum, cor-
            responding to the lowest electron transitions in $Me^{2+}N$ CH-
            $(CH\ CH)_k$--NMe^2. The results of the calculation are in good
            agreement with experiment, if it is assumed that a free el
            electron pair is localized on the nitrogen atom. Allowance
            for the nuclear interaction with the electrons in the metal-
            lic model causes the electron states to form electron zones,
            analogous to the Brillouin zones in solids. -- A.I.
            Osipov

Card 2/2

HUNGARY/Atomic and Molecular Physics - Statistical Physics.   D-
        Thermodynamics

Abs Jour : Ref Zhur Fizika, No 3, 1960, 5595

Author   : Berenoz Ferenc

Inst   : Egyetemi Elmeleti Fiz. Intezet, Szeged. Hungary

Title   : Account of Hybridization in the Hydrogen Molecule

Orig Pub : Magyar fiz. folyrirat, 1959, 7, No 1, 61-66

Abstract : It is shown that account of polarization of the electron
            cloud in the atom leads, in calculating the binding ener-
            gy of the molecule, to an effect of equal importance (in
            order of magnitude), as account of the electron correla-
            tion. Detail calculations are given for the hydrogen
            molecule.

Card 1/1

EAST GERMANY/Atomic and Molecular Physics - Statistical Physics.   D-
            Thermodynamics.

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5627

Author   :   Ardenne Manfred
Inst   :   -
Title   :   Progress in the Mass Spectrometry of Polyatomic Molecules

Orig Pub   :   Z. Angew. Phys., 1959, 11, No 4, 121-131

Abstract   :   The author describes a precision molecular mass spectro-
                meter with an ion source, producing ions through fussion
                of the electrons to neutral polyatomic molecules. Such a
                mass spectrometer is capable of determining the molecular
                weights accurate to one mass for substances with masses
                (M) greater than 1,000. The possibility of experimental
                determination of the mass spectra of polyatomic molecules
                without disintegrating them, and also the formation of
                negative molecular ions as a result of the fussion of the
                electron to the molecule, is explained by the production

Card 1/2

EAST GERMANY/Atomic amd Molecular Physics - Statistical Physics.   D-
            Thermodynamics.

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 5627

                of the high precision ion source with extremely high
                density of slow electrons and relatively high density
                of molecular vapor. The construction and the operating
                principle of such an ion source are described. One can
                consider the great accomplishment to be the production
                in the source of an evaporation system with simultaneous
                feeding of the analyzed and standard vapor, the mass-
                spectrum lines of which have equal intensity. The resol-
                ving power of the mass spectrometer reaches values from
                2500 to 4, 00. Spectrograms are given of higher alcohols
                with M ranging from 230 to 269. It is indicated that if
                the instrument is well adjusted mass spectra can be ob-
                tained for oils with ion groups ranging from M   450 to
                700, and also for substances with M up to 900. -- G.D.
                Karstew

Card 2/2

EAST GERMANY/Atomic and Molecular Physics. - Statistical Physics.   D-
          Thermodynamics.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5628

Author   : Ardenne Manfred von
Inst   : -
Title   : Progress in Mass Spectrometry of Polyatomic Molecules

Orig Pub   : Wiss. Z.E.M. Arndt-Univ. Greifswald. Math.-Naturwiss.
               Rune, 1957 -1958, 7, No 3-4, 161-174

Abstract   : See Abstract 5672.

Card 1/1

CHINA/Atomic and Molecular Physics - Heat   D-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5646

Author   : Yan'Tsz"-tszyun'
Inst   : -
Title   : Equation of State of Real Gases

Orig Pub   : Kesyue tszin'zhan', Kekhue jinzhan, 1958, No 2, 45-46

Abstract   : No abstract.

Card 1/1

EAST GERMANY/Atomic and Molecular Physics - High Pressure Physics.   D-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5680

Author   : Straubel Harald
Inst   : -
Title   : Use of the Curie Point in Ferrites for Temperature Control

Orig Pub   : Z. Angew Phys., 1959, 11, No 5, 172-174

Abstract   : In magnetically-soft ferrites, the variation of the magne-
              tic permeability with the temperature has a very sharp
              variation near the Curie point. Such a property makes it
              possible to use such ferrites for control and regulation.
              Examples of several instruments are given (thermostats,
              water-operated switches for diffusion pumps, switches
              for liquid air), in which magnetically-soft ferrites are
              used. They can be used also for the measurement of
              radiation.

Card 1/1

POLAND/Atomic and Molecular Physics - High Pressure Physics.   D-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5681

Author   : Sivietoslawski, W., Zielenkiewicz, W.

Inst   : Institute of Chemical Physics, Polish Academy of Sciences

Title   : Thermostats Used with the Labyrinth Flow Calorimeter

Orig Pub   : Bull. Acad. polon. sci. Ser. sci. chem., geol. et geogr.,
              1959, 7, No 2, 107-110

Abstract   : Description of a thermostat for a labyrinth-flow calorime-
              ter (Abstract 5683). The thermostat contains 400 liters
              of water. To stir such an amount of water, four propeller
              stirrers are used. In addition to the automatic apparatus
              for the control of the temperature, the thermostat contains
              also a Beckman ultrathermometer for detecting very small
              water temperature fluctuations. The changes in temperature
              in the thermostat did not exceed $\pm$ 0.001° C in 14 days.
                                          -- T.V. Zakharova

Card 1/1

Abstract   : The authors describe a labyrinth water-flow calorimeter
              (LFC) for long-duration thermal processes, based on the
              principle of heat exchange between the reacting mixture
              or another measurement object and water flowing uniformly
              through all the channels of two labyrinths. To determine
              the heat liberated by the body per unit time, it is neces-
              sary to measure the difference t_2-t_1 between the tempera-
              tures of the water leaving (t_2) and entering (t_1) in the
              LFC, and the amount of water, V, flowing per unit time
              through the channels of LFC. The advantage of this type

Card 1/2

              of calorimeter is that to measure the thermal effect it
              is not necessary to know the specific heat of the inves-
              tigated object. In the LFC use is made of automatic
              devices for measuring V accurate to $\pm$ 0.1%, and for
              measuring $\Delta t = t_2 - t_1$ with a maximum error of $\pm$ 0.001°
              C. The LFC is placed in a water thermostatic bath, sur-
              rounded by an air thermostatic bath. Constant temperature
              is maintained in the thermostatic bath, accurate to
              $\pm$ 0.001° C. The LFC makes it possible to determine the
              thermal effects on the order of 1 cal/hr under the condi-
              tion that the rate of flow of the liquid is 500 mL/hr.
              The LFC is calibrated by means of an electric heater made
              of manganin. -- T.V. Zakharova

Card 2/2

Author   : Karapet'yants M.Kh., Chen Guan-yue
Inst   : -
Title   : Temperature Dependence of Vapor Pressure. I. Combined
               Method of Calculation in Series of Similar Substances

Orig Pub   : S"chun'dasyue syuebao (tse"zhan'kesyue). Sichuan daxue xue-
               bao. Ziran kexue, Acta scient. natur. Univ. szechuan.,
               1958, No 2, 91-104

Abstract   : The authors have evaluated and verified certain of the
               most accurate methods of calculating the temperature
               dependence of vapor pressure of individual substances.
               In particular, an evaluation is made of methods of com-
               parative calculation, for which certain quantitative coef-
               ficients are introduced to permit application of these
               methods to homological series. It is shown that in the
               case of series of similar substances, the most productive

Card 1/3

is the method of comparison of the boiling temperature
function for equal pressure. On the basis of the results
obtained, a combined method of calculating the P-T depen-
dence has been obtained and verified. It is based on the
application of the following equation for interpolation

$$lg \, P = a' \, \frac{b'}{c'+t}. \tag{1}$$

and the following equation for extrapolation

$$lg \, T = a + b \, lg \, T, \tag{2}$$

with the equations for extrapolation by substances being

$$a = A + B \, lg \, n + C \, lg^2 \, n + D \, lg^3 n, \tag{3}$$
$$lg \, b = A' + B' \, lg \, n + C' \, lg^2 \, n + D' \, lg^3 \, n; \tag{4}$$

Card 2/3

Here a, b, and a', b', and c' are the individual cons-
tants, while A, B, C, D and A', B', C', D' are the cons-
tants for a given series, n is the number of CH_2 groups
in the alkyl radical. In the presence of P-T data for
four substances (including the standard) it is possible
to estimate with the aid of Eqs. (3) and (4) the tempera-
ture dependence of the vapor pressure of the uninvestiga-
ted higher homologues. If the interval of temperature
variation for the considered substance is greater than
for the standard substance, the latter can be broadened
by means of a method of inverse calculation, which will
be treated in Part II of the paper.
Bibliography, 29 titles.

Card 3/3

Author   : Chen Guan-yue, Karapet'-yants M.Kh.
Inst   : -
Title   : Temperature Dependence of Vapor Pressure. II. Normal
              Alkanes

Abstract   : For Part I see Abstract 5701.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5731

Author   : Borbely Samu
Inst   : -
Title   : Investigations Connected with Nonlinear Heat Conduction

Orig Pub   : Magyar tud. akad. Musz. tud. oszt. kozl., 1959, 23,
              No 3-4, 261-283. Hozzaszolasok, 284-286

Abstract   : If the coefficient of heat conduction in the known Fourier
              equation for heat conduction is considered to be the varia-
              ble, then the equation becomes nonlinear and its solution
              involves unsurmountable mathematical difficulties. By
              generalizing the experimental results, the author develops
              an approximate method of solving the equations of heat
              conduction.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5784

Author   : Minnigerode Gunther von

Inst   : First Physics Institute, The University, Gottingen,
              West Germany

Title   : Effect of Lattice Imperfections on the Critical Temperatures
              of Different Superconductors

Orig Pub   : Z. Phys., 1959, 154, No 4, 442-459

Abstract   : For pure Tl, Sn, In. Nb, Pb, Hg, and Al (with impurities
              less than 0.01%) an investigation was made of the effect
              of physical distortions of the crystal structure on the
              critical temperature T_c. For this purpose thin foils
              (10 microns) of metals were obtained by cold working
              (transverse rolling) at helium temperatures. It was found
              that T_c shifts in this case by several tenths of a degree

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5784

(usually $\triangle T_c > 0$). Annealing removes these changes of T_c. It is shown further that the condensation of films of these metals on crystalline quartz at hemium temperatures causes changes in T_c, coinciding in sign with $\triangle T_c$ due to plastic deformation. (Exceptions are Nb and Al, which are related with their chemical activities with respect to the residual gas during the process of film evaporation). A similar action is exerted by rolling of the films after their annealing. A conclusion is drawn that the shifts in T_c in films deposited at low temperatures are due essentially to physical lattice imperfections. -- P.A. Chentsov

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5837

Author   : Ganti Tibar
Inst   : -
Title   : Investigation of a Mixture of Ethyl Alcohol and Water
               by X-Ray Diffraction

Orig Pub   : Magyar fiz. folyoirat, 1959, 7, No 1, 19-35

Abstract   : The article contains a survey of data on x-ray investigation of structure of mixtures of various liquids, and also a description of the research being done on the structure of the mixture of ethyl alcohol and water. The intensity of the outermost maximum, due to the structure of the water, was investigated. At an alcohol contents up to 72%, the maximum can still be clearly observed, but when the alcohol contents becomes 82.5%, it drops out completely. This is evidence that starting with these concentrations all the water molecules participate in the hydratation of the

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5837

            alcohol. Photographs, tables, and graphs are given to
            illustrate this statement.
            Bibliography, 17 titles. -- V.I. Lend'yel

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5844

Author   : Pawitsch, M.I.
Inst   : -
Title   : Heterogeneous Equilibriums in Water-Salt Systems at
               High Temperatures

Orig Pub   : Freiberger Forschungsh., 1959, A, No 123, 269-286.
               Diskuss., 286.

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5940

Author   : Majer Josef

Inst   : Research Institute for Macromolecular Chemistry, Brno,
               Czechoslovakia

Title   : Effect of Temperature on Viscosity of Molten Polyethylene

Orig Pub   : Chem. prumysl, 1959, 9, No 4, 219-220

Abstract   : Using an extrusion plastomer, the author measured the
               activation energy E_e of the flow of polyethylene (I) at a
               constant value of the shear stress $\tau = 8.14 \times 10^5$ dyne/
               cm^2. The value of E_a amount to 6.8 kcal/mole for I of
               low pressure (Ziegler type and 11.4 kcal/mole for I of
               high pressure, and these values do not change in the in-
               vestigated range of the yield factor in specimens with
               identical prior history. Different values of E_a of

Card 1/2

               polyethylenes prepared by different ways, are apparently
               due to the influence of branching.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5942

Author   : Vene, N., Mohorcic, G.
Inst   : -
Title   : Viscosity and Light Scattering of Solutions of Polyace-
             napthylene

Orig Pub   : Pepts   J. Stefan   Inst., 1958, 5, 71-79

Abstract   : Measurements have been made in solutions of polyacenapthy-
             lene in tetrahydrofurane af the viscosity $[\eta]$ in the
             concentration region from 6×10^{-4} to 60×10^{-4} g/cm^3 at
             $20.00 \pm 0.01°$ C and the light scattering was measured at
             concentrations 10^{-5} -- 40×10^{-5} g/cm^3 at $20°$ C. The cons-
             tants are obtained in the equations $[\eta]$ kM^a; $[\nu] = \Phi R^3/$
             M, $R^2 = aM + b$, where M is the molecular weight and k and
             a are constants, R^2 is the average value of the square of
             the distance between the ends of the molecules, and Φ
             is a constant independent of the concentration and

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5942

             temperature for all flexible linear polymers. It is
             shown that the polyacenapthylene behaves in a solution
              like chain molecules with side groups of the polystyrol
             type.
             Bibliography, 20 titles. -- T.V. Zakharova

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5947

Author   : Pavlinec Mir
Inst   : -
Title   : Photoelasticity Constant and Optical Sensitivity of
            Certain Materials

Orig Pub   : Jemna Mech. a opt., 1959, 4, 126-127

Abstract   : The principles underlying the measurement of photoelasti-
               city are briefly described, and the photoelasticity cons-
               tant K is described. Values of K are given for artificial
               resins, celluloid, and glass. In practice one employs ins-
               tead of K the optical sensitivity of model materials,
               given by small k   1/K. A classification is proposed for
               materials on the basis of the value of k. The values of
               k are given for certain materials (flints, polymethylme-
               tacrylates, and phenolformaldehydes).

Card 1/1

POLAND/Solid State Physics - Solid State Theory.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5969

Author   : Buras Bronislaw, O'Connor Denis
Inst   : -
Title   : The Neutron-Phonon Interaction in Solids

Orig Pub   : Nukleonika, 1959, 4, No 2, 119-140

Abstract   : No abstract.

Card 1/1

POLAND/Solid State Physics - Solid State Theory.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5972

Author   : Sledzih Jan
Inst   : -
Title   : Modified Bohm and Pines Collective Description of Electron
               Interactions in Crystals. II.

Orig Pub   : Acta phys. polon., 1959, 18, No 1, 57-73

Abstract   : The author considers the canonical transformation that
               eliminates the interaction operator from the Hamiltonian.
               It is shown that this transformation leads to changed sup-
               plementary conditions and to a new Hamiltonian. The trans-
               formation is applied not accurately, but also in the appro-
               ximation of the first commutator with a generating trans-
               formation function. By virtue of this, the resultant assem-
               bly of additional conditions and the new Hamiltonian are
               considered more readily as postulated, than as correctly
               derived. Generalized dispersion relations are obtained.

Card 1/2

POLAND/Solid State Physics - Solid State Theory.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 5972

               For Part I see Referat Zhur Fizika 1960, No 1, 1003.

Card 2/2

EAST GERMANY/Solid State Physics - Structural Crystallography.   E

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6019

Author   : Laue Max
Inst   : -
Title   : X-Ray Wave Fields in Crystals.

Orig Pub   : V. Sitzungsber. Dtseh. Akad. Wiss. Berlin kl. Math.
               Phys. und Techn., 1959, 26 S., ell.)

Abstract   : No abstract.

Card 1/1

HUNGARY/Solid State Physics - Structural Crystallography.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6022

Author   : Keglerich Laszlo
Inst   : -
Title   : Statistics of Intensities in the Investigation of X-ray
               Fine Structure.

Orig Pub   : Magyar fiz. folyoirat, 1959, 7, No 1, 81-88

Abstract   : No abstract.

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6023

Author : Keglerich Laszlo
Inst : -
Title : Methods of Investigating Intensity Statistics and Their Application.

Orig Pub : Magyar fiz. folyoirat, 1959, 7, No 2, 145-166

Abstract : No abstract.

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6027

Author : Rajewsky Boris, Heuss Kurt

Inst : Max Planck Institute of Biophysics, Frankfurt am Main, West Germany

Title : 5-kw X-ray Tube with Cylindrical Anode

Orig Pub : Z. angew. Phys. 1959, 11, No 4, 147-149

Abstract : The authors describe a 5-kw x-ray tube, the anode of which is a hollow cylinder of aluminum, 480 mm long and 80 mm in diameter; the cathode consists of eight tungsten wires 0.4 mm in diameter, stretched on the outside of the cylinder parallel to its axis. The radiation immerges from the inside of the hollow cylindrical anode. The overall area of the radiating surface is 750 cm^2. The tube gives a large and uniformly distributed power (doses on the order

Card 1/2

of 2,000 r/min at the center of the anode), and is suita-
ble for continuous irradiation (for example, in steriliza-
tion).   -- T.N. Tarkhova

Card 2/2

Author   : Hajciechawski Kazimierz
Inst   : -
Title   : Theory of Order in Fe_2Al Alloy

Abstract   : A statistical theory is proposed for the process of or-
              dering in the Fe_2Al alloy. The expression for the confi-
              gurational energy of the alloy is written with allowance
              for the interaction of the given atom with atoms located
              on the first three coordination spheres. The state of
              thermodynamic equilibrium is obtained from the condition
              of the minimum of free configurational energy. The or-
              dering temperature is expressed in terms of the interac-
              tion energies $V(2)$ and $V(3)$ of the given atom with the
              atoms of the second and third coordination spheres respec-
              tively. The experimental value of the ordering temperature

Card 1/2

POLAND/Solid State Physics - Phase Equilibria. Phase Conversions.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6074

(530° C) leads to the expression $2 V(3) = V(2)$. --
V.V. Shmidt

Card 2/2

EAST GERMANY/Solid State Physics - Crystallization.   E-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6105

Author   : Packter, A.

Inst   : The University, London, Great Britian

Title   : Studies on the Crystal Growth of Soluble Metal Salts.
              Part II -- The Factors that Determine the Particle Size
              of Crystals Grown by Cooling Hot Supersaturated Solutions

Orig Pub   : Z. Phys. Chem. (DDR), 1959, 210, No 3-4, 196-208

Abstract   : In Part I (Referat Zhur Fizika, 1956, No 9, 25737) a
              report was made on the influence of protective substances
              on the reaction occurring on crystalline surfaces. In
              the present paper, considering the growth of the crystal
              as a process consisting of two stages, namely the forma-
              tion of the nucleus and its subsequent growth, the author
              has made an experimental and theoretical study of the

Card 1/2

Abs Jour   : Ref Zhur Fizika, no 3, 1960, 6105

factors that determine the size of the crystal particles
upon cooling at different rates (0.004 -- 4.7 deg/sec)
of hot supersaturated solutions of salts of metals. It
is shown that at low rates of cooling, the size of the
precipitating crystals in inverse proportion to the rate
of cooling and the rate of formation of supersaturation
in accordance with the law of effective masses. In
rapid cooling the principal growth of the crystal begins
after the solution reaches the final temperature and the
dimension of the crystals depends on the final supersa-
turation in accordance with the law of effective masses.
-- O.S. Zaytsev

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6130

Author   : Gerold, V., Meier, F.

Inst   : Max Planck Institute for Metal Research, Stuttgart, West
              Germany

Title   : X-Ray Diffraction Observation of Dislocations in Germanium

Orig Pub   : Z. Phys., 1959, 155, No 4, 387-394

Abstract   : The method of anomalous absorption of x-rays in a parallel
              beam (Referat Zhur Fizika, 1959, No 7, 15377) makes it
              possible to obtain projections of disturbances to the
              periodicity of the lattice. This method was used to study
              the spatial distribution of dislocations in plates 0.7 --
              1 mm thick, cut out of germanium crystals with dislocation
              densities 100 -- 1,000 lines per cm^2. The reflecting pla-
              nes were chosen to be the (220) planes, since they exhibit

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6130

a maximum anomalous absorption effect. From the placement
and form of the projections of the dislocations on the
x-ray photographs at different directions of the incident
rays, one can determine that the majority of the disloca-
tions lie in the (111) planes. The contrast of the image
of the dislocation on the photograph depends in a definite
manner on the angle between the Burgers vector and the
normal to the reflecting plane. Using this, the authors
have found that in the given case the Burgers vector lies
also in the (111) plane, which, thus, is the slip plane
of the dislocations. It was impossible to interpret the
phenomenon of the reduction in the contrast of the image
with decreasing angle between the directions of the dislo-
cation line and the wave field.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6138

Author   : Bocvar, A.A., Tomson, G.I., Cebatarev, N.I.
Inst   : -
Title   : Recrystallization of Uranium Under the Influence of Cyclic
               Heat Treatment

Orig Pub   : Kermenergie, 1959, 2, No 4, 386-389

Abstract   : Translated from the Journal "Atomnaya energiya" /Atomic
               Energy/ 1958, 4, No 6, 555.
               See Referat Zhur Fizika 1959, No 4, 8192.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6155

Author   : Bunge, H.J.

Inst   : Institute for Structure Research, German Academy of
               Sciences, Berlin, East Germany

Title   : On the Determination of Fiber Textures

Orig Pub   : Monatsber. Dtsch. Akad. Wiss. Berlin, 1959, 1, No 1,
               27-31

Abstract   : In the study of the texture of polycrystalline materials
               with the aid of pole figures, one obtains the density of
               distribution $R_H(\Phi)$ of the normals of the reflecting
               planes of the lattice H = $\{hk\ell\}$ relative to the axis
               of the fiber (Φ is the angle with the axis of the fiber).
               For a quantitative estimate of the textures, it is more
               convenient to consider the density of distribution, T,

Card 1/3

Abs Jour   : Ref Zhur Fizika, no 3, 1960, 6155

of the axis of the fiber relative to the crystallographic
axes $[100]$, $[110]$, and $[111]$, forming a triangle,
represented in stereographic projection. The quantities
T and R_H are related by

$$R_H(\Phi) = T_H(\Phi) = \frac{1}{2\pi} \int_0^{2\pi} T(\Phi, \beta)\, d\beta.$$

with $R_H(\Phi = 0) = T(\Phi = 0)$. A method is proposed for
determining the value of T by expanding the measured func-
tion $R_H(\Phi)$ in a Fourier series. This method of calcula-
tion of the distribution of the orientations of the crys-
tallites of the polycrystalline specimen is analogous to
considerable extent to the method of structural analysis
of obtaining the distribution of the electron density in
the elementary cell of a crystal, but is simpler.

Card 2/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6155

The applicability of the method was verified by determining the texture of an aluminum wire (degree of drawing 40%). Data are obtained for the three pole figure, (111), (100), and (110), coincide and are evidence of the presence of a double texture $\sqrt{100}$, $\sqrt{111}$ in the specimen, and the intensity of the orientation of $\sqrt{100}$ is twice as large. The errors amount to approximately 15% of the maximum value of the distribution density. -- M.M. Borodkina

Card 3/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6187

Author   : Stiller, H.

Inst   : Laboratory for Technical Physics, Technical College, Munich, West Germany

Title   : Internal Friction as a Consequence of Order-Change Processes

Orig Pub   : Ann. Phys. (DDR), 1959, 3, No 5-6, 283-297

Abstract   : Based on the attenuation of torsional oscillations, an investigation was made of the temperature dependence of the internal friction in alloys AgPt, AgMn, AgZn, AgMg, and AuCd of various compositions. In the interval from 20 to 500° C, two absorption maxima were found in the alloys AgZn, AgMg, and AuCd, and only one in the AgMn alloy and none in AgPt. The maximum in AgZn is of the

Card 1/3

EAST GERMANY/Solid State Physics - Mechanical Properties.   E-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6187

same type as that obtained by Novik, and is connected with
the change in the position of the Zn atoms. It is shown
that the observed dependence of absorption on the concen-
tration does not agree with the Zeener hypothesis. The
reasons for this disagreement are explained on the basis
of the Friedel theory. The maxima in AuCd and AgMg are
analogous in width and concentration dependence to the
maxima in AgZn. They are also connected with the changes
in the positions of the pairs of the atoms of the dissol-
ved component. The fact that the maxima of absorption at
high temperatures lie as in AgZn is explained by the ex-
change of the $Cd5s$ -- $Au5d$ electrons and, $Mg3s$ -- $Ag4d$
respectively. These exchanges serve as a base for the
formation of ordered phases U_3Cd, AuCd, AgMg, and $AgMg_3$.
The absence of absorption, connected with the changes in
the positions of the dissolved atoms in the alloys AgMn
and AgPt is explained by the fact that in these mixed

Card 2/3

EAST GERMANY/Solid State Physics - Mechanical Properties.   E-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6187

crystals the atoms of the dissolved components are dis-
tributed statistically and their order is also connected
with the exchange interaction with atoms of the solvent.
-- V.R. Regel'

Card 3/3

CZECHOSLOVAKIA/Solid State Physics - Effect of Irradiation on   E-
                Structure and Properties.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6209

Author   : Trnka Jaraslan

Inst   : Institute of Technical Physics, Czechoslovak Academy
              of Sciences, Prague, Czechoslovakia

Title   : A Contribution to the Study of the Thermal Properties of
              NaCl:Ca Crystals Irradiated with X-Rays.

Orig Pub   : Chekhosl. fiz. zh., 1958, 8, No 6, 749

Abstract   : To investigate the influence of x-ray irradiation in the
              process of annealings the temperature difference $\triangle$ T
              of the irradiated and non-irradiated crystals was regis-
              tered. Crystals with molecular contents of 0.2, 0.05,
              0.002% of calcium were investigated. The x-ray irradia-
              tion was at 50 kv and 30 ma through a beryllium window

Card 1/2

              for two hours. In each of the experiments a maximum was
              observed on the curve showing the dependence of $\triangle$ T on
              the oven temperature. With the increasing calcium con-
              centration, the position of the maximum shifted towards
              the lower oven temperatures. -- R.I. Garbev

Card 2/2

Abs Jour   : Ref Zhur Fizika, , Mp 3, 1960, 6225

Author   : Grossmann Gisbert

Inst   : Leningrad State University

Title   : Magnetic Chemical Investigations of the System FeO$_{1+x}$·
               MgO(0< x < 0.5)

Orig Pub   : Z. anorgan. und allgem. Chem., 1959, 299, No 5-6,
               271-280

Abstract   : The magnetic susceptibility of 15 specimens of FeO$_{1+x}$·
               0.925NgO(0 $\leq$ x $\leq$ 0.5) was measured at 700, 750, 800,
               850, and 900° C. The results are compared with those cal-
               culated theoretically for definite conditions, and also
               with the magnetic susceptibility of the system Fe-O,
               measured earlier. The isotherms of the susceptibility of
               magnesio wustite (FeO$_{1+y}$· 0.925MgO)(I) and wustite

Card 1/2

(FeO$_{1+y}$) make it possible to make several conclusions
regarding the structure of the phase of I. It is quite
probable that both in wustite and in I the Fe^{3+} ions
are present in the form of accumulations. These "super-
microinhomogeneities" do not mean, however, that I from
the point of view of thermodynamics consists of two solid
phases. The interval of homogeneity in phase I at 700° C
lies between FeO$_{1.04}$·0.925MgO and FeO$_{1.09}$·0.925FgO, and at
900° C it lies between FeO$_{1.015}$·0.925MgO and approximately
FeO$_{1.11}$·0.925MgO. For specimens lying in the region of
homogeneous phase I, the Curie-Weiss law is satisfied.
In the case of high contents of oxygen (x > 0.1) as a
result of the appearance of the second solid phase of vari-
able concentration, the dependence of the susceptibility
in the composition becomes very complicated.

Card 2/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6238

Author   :   Ruske, H.

Inst   :   Institute for Magnetic Materials, Jena, East Germany

Title   :   Thin Nickel Films with Large Value of Coercive Force
                and With Large Stored Magnetic Energy

Orig Pub   :   Ann. Phys. (DDR), 1959, 3, No 5-6, 323-326

Abstract   :   An investigation was made of the magnetic properties of
                cylindrical multi-layer specimens of nickel with inter-
                layers of copper as a function of the applied pressure
                along the axis. It is possible to obtain in this manner
                values $H_c \sim 1,000$ oersted and more and stored energies
                of $\sim 3.5 \times 10^6$ gauss-oersted in the volume of the nickel.
                Such high values of H_c and $(BH)_{max}$ could be obtained pre-
                viously only in thin annealed films ($d_{Ni} \approx 150$ -- 700 Å).

Card 1/2

EAST GERMANY/Magnetism. Ferromagentism.   F-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6238

                The effect of the thickness of the film on H_c is reinfor-
                ced by the application of external pressure.

Card 2/2

CZECHOSLOVAKIA/Magnetism. - Ferromagnetism.   F-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6241

Author   :   Kaezer Jan, Gemperle Richard
Inst   :   -
Title   :   Remarks on the Paper by Specek "Structure of Surface
                Closing Domains on the (100) Surface in Iron"

Orig Pub   :   Ceskosl. casop. fys., 1959, 9, No 1, 115

Abstract   :   Refers to Referat Zhur Fizika 1959, No 6, 13206.

Card 1/1

CZECHOSLOVAKIA/Magnetism.- Ferromagnetism.   F-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6242

Author   :   Kaczer Jan
Inst   :   -
Title   :   Maze Patterns on Silicon Iron

Orig Pub   :   Ceskosl. casop. fys., 1958, 8, No 6, 742-743

Abstract   :   The author considers the cause of the occurrence of a
                maze pattern on silicon iron. It is proposed that the
                maze patterns produced around the surface of the speci-
                men only in the case when the specimen is subjected to
                cylindrical compression. In the case of such a compres-
                sion, the specimen becomes a single-axis magnet. In
                other words, if the end surface of the specimen is in
                the plane $z = 0$, then there takes place $\sigma_{xx} = k$ $\sigma_{yy} = -p$,
                $\sigma_{zz} = 0$, where σ_{xx}, σ_{yy}, and σ_{zz} are the

Card 1/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6242

principal stresses, k a positive constant, and p the pressure. The foregoing assumption is confirmed by the following experiment. A cylinder 8 mm in diameter and 10 mm long was cut from a single crystal of silicon iron. The axis of the cylinder was chosen in one of the principal crystallographic directions. One end of the cylinder was electrolytically polished, and a microphotograph of its domain structure was taken. The specimen was then subjected to a radial compression with a stress $\sim$10 kg/nm^2. Under such a compression, the linear structure of the domains was converted into a zig-zag structure. After removing the compression, the initial structure was restored. The appearance of maze pattern in silicon iron is due to elastic stresses near the surface of the specimen under the influence of radial pressure.

Card 2/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6243

Author   :   Kaczer Jan
Inst   :   -
Title   :   Maze Patterns on Silicon Iron.

Orig Pub   :   Chekhosl. fiz, zh., 1958, 8, No 6, 747-748

Abstract   :   See Abstract 6242.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6248

Author   : Andra H.

Inst   : Institute for Magnetic Materials, Jena, East Germany

Title   : Magnetic Powder Patterns at High Temperatures

Orig Pub   : Ann. Phys. (DDR), 1959, 3, No 5-6, 334-339

Abstract   : A suspension was obtained, making it possible to investi-
               gate the domain structure up to $400°$ C. It was made by
               introducing smake from burned $Se(CO)_5$ (or from an arc
               discharge between iron electrodes) into paraffin oil.
               To prevent coagulation of the particles, calcium soap is
               introduced in the suspension. The necessary fractioni-
               zation and separation of the conglomerates is obtained
               with the aid of ultrasound (frequency 800 kcs). The sus-
               pension is deposited on the surface of a specimen at the

Card 1/2

investigated temperature. The observation of the figures
is carried out at room temperature with the suspension
dried. The suspension described has a smaller resolving
power than the ordinary suspension. It is possible,
however, to increase its qualities and principles by a
more suitable combination of the powder, liquid, and
substance preventing the coagulation, and also through
the application of a dispersion procedure.
See Referat Zhur Fizika, No 12, 1956, 34911. -- A.A.
Glazer

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6252

Author   : Morkowski Janusz

Inst   : Institute of Physics, Polish Academy of Sciences, Warsaw

Title   : Reversible Susceptibility under Stress

Orig Pub   : Acta phys. polon., 1958, 17, No 6, 435-453

Abstract   : A measurement was made of the reversible susceptibility
              of polycrystals of nickel, subjected to tension (up to
              21 kg/mm^2) and compression (to 14 kg/mm^2) in magnetic
              fields up to 68 oersteds. During tension, the reversible
              susceptibility decreases in the region of weak fields
              and increases in stronger fields. Small compression
              stresses (up to 3 kg/mm^2) cause the opposite effect. The
              compression above 3 kg/mm^2 leads to a reduction in the
              reversible susceptibility at all values of the magnetic

Card 1/2

POLAND/Magnetism - Ferromagnetism.   F-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6252

              field. Experimental data are compared with the calculated
              ones, based on statistical theory.

Card 2/2

Abstract   : The hysteresis loops of iron wires, first subjected to
               elastic deformation (first state) and then to plastic
               deformation (second state) were measured. The measure-
               ments were carried out by a ballistic method. Data are
               given on the variation of the principal hysteresis cha-
               racteristics with such a treatment. The maximum permea-
               bility increases with tension by approximately 30% up to

Card 1/2

               a tension of 20 kg.mm^2 for wire in the first state.
               For wires in the second state, the maximum permeability
               increases approximately by a factor of 3 with increasing
               stress up to 20 kg/mm^2. Tension above 20 kg/mm2 causes
               a reduction in the maximum of permeability for both sta-
               tes. -- A.V. Zalesskiy

Card 2/2

Abstract   : A report is made of the preliminary results on the ob-
               servation of the time decrease in reversible permeabili-
               ty of nickel, appearing when the compression stresses
               are increased. The value of the drop is on the order of
               1%. It is indicated that the drop in the reversible
               permeability appears probably also under other conditions,
               but as a result of the smallness of the effect its measu-
               rement is difficult. The observed drop in the reversible
               permeability is analogous in its nature to the phenomenon

Card 1/2

of desaccommodation, discovered by Snoek in the forties
(Snoek J.S. "Physica", 1939, 6, 161). -- A.V. Zalesskiy

Card 2/2

CZECHOSLOVAKIA/Magnetism - Ferromagnetism.   F-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6264

Author   : Tischer Zdineh
Inst   : -
Title   : Magnetically Soft Materials of Soviet Manufacture

Orig Pub   : Shelovaci techn., 1959, 7, No 4, 131-132

Abstract   : Survey.

Card 1/1

CZECHOSLOVAKIA/Magnetism - Ferromagnetism.   F-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6266

Author   : Hajko Vlademir, Daniel-Szabo Juraj

Inst   : Polytechnic Institute, Kosice, Czechoslovakia

Title   : Effect of Alternating Magnetic Fields on the Residual
               State of Magnetically Soft Materials

Orig Pub   : Chekhosl. fiz. zh., 1959, 9, No 1, 37-46

Abstract   : An investigation is made of the effect of an alternating
               magnetic field with different values of the maximum am-
               plitude on the residual state or the apparent residual
               state of ring-like or unclosed specimens of metallic or
               non-metallic soft ferromagnets. The interpretation of
               the corresponding dependences is based on the Kondorskiy
               representation of the composition of polycrystalline fer-
               romagnetic material.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6267

Author   : Hajko Vladimir, Daniel-Szabo Juraj
Inst   : -
Title   : Effect of Alternating Magnetic Field on Residual State
               of Magnetically Soft Material.

Orig Pub   : Ceskosl. casop. fys., 1959, 9, No 1, 38-46

Abstract   : See Abstract 6266.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6274

Author   : Vavra, J.
Inst   : -
Title   : Ferromagnetic Oxides of Iron

Orig Pub   : Collect. Czechosl. Chem. Communs, 1959, 24, No 3, 657-
               662

Abstract   : Translated from Chem. listy, 1958, 52, 573.

Card 1/1

EAST GERMANY/Magnetism - Ferrites and Ferromagnetism.   F-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6303

Author   : Kienlin, A. von

Inst   : Siemens & Halske AG, Munich, West Germany

Title   : Behavior of Individual Stabilized Domain Walls in Cyclic
               Magnetization

Orig Pub   : Z. angew. Phys. 1959, 11, No 3, 118-119

Abstract   : An oscillographic method was used to investigate the
               hystereis loops of magnetite with cobalt inclusions.
               Specimens of torodial form were subjected to a special
               heat treatment, namely soaking in a longitudinal magnetic
               field of 100 oersteds to obtain a rectangular hysteresis
               loop, demagnetization in a decreasing alternating field to
               reduce the number of boundaries, and finally soaking at
               increased temperature in the absence of a magnetic field

Card 1/2

EAST GERMANY/Magnetism - Ferrites and Ferromagnetism.   F-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6303

               to stabilize the positions of the domain boundaries.
               In cyclic magnetization of these specimens, one observes
               large irreversible jumps in the domain boundaries, corres-
               ponding to large magnetization-reversal volumes, which
               occur irregularly and independently of each other. Photo-
               graphs of the oscillograms are given. The connection
               between the observed phenomenon and analogous phenomena
               with nickel-copper, nickel, and manganese ferrites, parti-
               cularly the appearance of diffusion aftereffect on nickel-
               copper ferrites in alternating fields at audiofrequency,
               are considered.   -- G.S. Krinchik

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6340

Author   : Skalinski Tadeusz

Inst   : The University, Warsaw, Poland

Title   : Optical Orientation of Atoms and Its Detection by Means
               of the Magnetic-Resonance Method

Orig Pub   : Postepy fiz., 1958, 9, No 5, 515-542

Abstract   : Under conditions of thermodynamic equilibrium, in the
               absence of external fields (or in the presence of not
               very strong fields), each of the states corresponding
               to a definite value of the magnetic quantum number con-
               tains an equal number of atoms. If at least one of the
               Zeeman sublevels is populated by atoms to a considerably
               greater degree then the remaining levels, then the so-called
               optical orientation of the atoms takes place. The author

Card 1/3

develops a method for realizing optical orientation of the
atoms both in the ground and in the excited states, by
resonant and cascade excitation of the atoms to a definite
Zeeman sublevel with the aid of corresponding polarized
light. Various magnetic-resonance installations, in which
optical orientations of atoms are observed, are discribed.
The principal formulas are given for the Zeeman levels of
the hyperfine structure for the case of both weak and
medium constant magnetic fields H_0. The question of the
influence of an admixture of extraneous gases on the opti-
cal orientation of the atoms of the investigated vapor or
gas is discussed. On the basis of the Kajorana-Brossel
formula (Brossel J., Thesis, Paris, 1951, Ann Phys. 1952,
6, 622) for the probability of transition between the
Zeeman sublevels of the hyperfine structure (F, m_F) and
F, m'_F) realized in a magnetic-resonance installation,
the form and the width of the obtained resonance lines is

Card 2/3

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6340

determined. This same formula, with the aid of experimen-
tal data on the optical orientation of atoms of various
isotopes of mercury, is used to calculate the average life-
times of the atoms in different states. The results of
the calculations are compared with the results obtained by
the usual optical methods. Cases are considered of obser-
vation of many-quantum resonant transitions in oriented
atoms of sodium and cesium, and the question of the measu-
rement of the Stark level shifts in these atoms in the case
when the field is parallel to the constant magnetic field
H_0 in the magnetic-resonance installation, is also discus-
sed. Problems are considered also of the investigation of
transition between sublevels of the hyperfine structure,
the determination of the moments of nuclei by means of the
method developed in the article, and also the use of double
resonance for a finite determination of the abovementioned
sublevels. -- L.A. Borisoglebskiy

Card 3/3

EAST GERMANY/Electronics - Dielectrics.   H

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6372

Author   : Das, J.N.

Inst   : College of Sciences, Raipur, India

Title   : The Dielectric and Piezoelectric Behavior of Pyrolusite
             (Polycrystalline Ore of MnO_2).

Orig Pub : Z. Phys., 1959, 155, No 4, 465-471

Abstract : An investigation was made of the dielectric properties of
             pyrolusite as a function of the temperature, frequency,
             and field intensity in the frequency range from 200 cy-
             cles to 10 kcs. The specimen at high values of dielectric,
             $\xi \asymp 10^5$. The function $\varepsilon = f(T)$ has a maximum at a
             value T_{max} of temperature that varies from specimen to
             specimen. Above this temperature, ε diminishes in accor-
             dance with the Curie-Weiss law. The value of ε diminishes

Card 1/3

exponentially with frequency and increases noticeably
with increasing effective voltage. This increase beco-
mes more noticeable as the frequency is decreased. The
presence of hysteresis loops was observed. The value of
the losses in pyrolusite (tan δ) also depends noticeably
on the temperature, frequency, and applied voltage. The
value of tan δ has a maximum at 300 -- 700 cycles, indi-
cating the presence of dielectric relaxation in the inves-
tigated specimens, analoguus in its causes to the relaxa-
tion observed earlier by other authors on polycrystalline
samples of rutile. A piezo-effect was also observed in
the pyrolusite specimens. A static method was used to
measure the coefficients of electromechanical coupling,
equal to (2.4 to 8.8) x 10^{-5} electrostatic units per
dyne. It is also shown that the resonant frequency of a
specimen connected in the circuit of a high frequency

Card 2/3

generator depends on the thickness of the specimen.   --
K.S. Aleksandrov

Card 3/3

EAST GERMANY/Electronics - Dielectrics.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6378

Author   : Calker Jan van, Linde Laurenz van der

Inst   : The University, Munster, West Germany

Title   : Measurement of the Field of Electrets and Investigation
              of the Formation of the Homocharge

Orig Pub   : Z. Phys., 1959, 155, No 4, 413-421

Abstract   : The electric field produced by an electret was measured,
              and the causes of formation of the homocharge were studied.
              To solve the first problem, use was made of a miniature
              capacitor of 160 micromicrofarad, which was introduced
              short circuited into the field, with one electrode grounded.
              The field intensity was determined from the charge flowing
              in the leads upon opening of the plates. Agreement bet-
              ween the experimental results and Swann's formula was found.

Card 1/2

EAST GERMANY/Electronics - Dielectrics.

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6378

The task of the second part of the work was to verify the
assumption concerning the mechanism of formation of the
homocharge, as a result of the transfer of charge to the
dielectric from the electrodes, a transfer which becomes
possible by the breakdown of the gas gap. For this pur-
pose, one electrode was made in the form of a needle, to
facilitate the breakdown. Under these conditions electrets
were formed, consisting of mixtures of carnauba wax,
beeswax, and rosin. It was found that the charge penetra-
ting into liquid caused it to oscillate, and as a result a
honeycomb pattern was formed on the surface after cooling.
The electrets displayed a considerable homocharge, which
was found to be much greater near the needle-like electrode
than on the opposite side. It was possible to form elec-
trets also of paraffin, and these were found charged by
the space charge of one polarity. -- V.Kh. Kozlovskiy

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6379

Author   : Calker, J. van, Froklich H.

Inst   : The University, Munster, West Germany

Title   : Investigation of Electrets Made of Carnauba Wax and the
               Origin of Their Heterocharges

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 216-224

Abstract   : Results are reported on the investigation of electrets
               made of carnauba wax. Specimens containing 80% carnauba
               wax and 20% beeswax were polarized in an electric field
               of 4 kg/cm. The change of the electrode was measured by
               the method of depolarization. The charge of an electret
               of carnauba wax varies with temperature in accordance
               with the law $Q = Q_0 \exp(-W/RT)$, where the activation ener-
               gy W ranges from 20 to 16 kcal/mole. With increasing time

Card 1/2

               of polarization of the electret, its charge increases,
               reaching saturation after 15 hours, if the polarization
               is carried out at a temperature of 64° C. The polariza-
               tion current, as a function of the temperature, behaves
               like the charge up to 30° after which it increases sharp-
               ly with diminishing temperature. The results of the ex-
               periment are in satisfactory agreement with the theory
               of occurrence of the heterocharge of the electrode, based
               on the notions concerning the space charge (McDonald and
               Ross, Physical Review, 1953, 92, 4). -- V.V. Krasnopevtsev

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6381

Author   : Hacke Jurgen

Inst   : The University, Giessen, West Germany

Title   : Effect of X-rays on the Ionic Conductivity of NaCl.

Orig Pub   : Z. Phys., 1959, 155, No 5, 628-635

Abstract   : Using an ac Wheatstone bridge, the author determined the
              electric conductivity (σ) of single crystals of NaCl
              at temperatures 180 -- 650° C. The dependence of log σ
              on 1/T consists of three straight lines with kinks at
              550 and 300° C and activation energies 41.5, 16.9, and
              22.8 kcal/mole, reckoning from the higher temperatures.
              The first two lines pertain to the intrinsic conductivi-
              ty, the third to the impurity conductivity. The crystals
              were exposed to x-rays at different temperatures with

Card 1/2

subsequent measurements of σ at the same temperatures.
After irradiation, σ first diminishes, and then again
increases. The equilibrium value of σ is found to be
less than the initial value. The lower the temperature of
the experiment, the stronger the effect. The lines log $\sigma =$
f(1/T) for the irradiated specimen are lower than prior
to irradiation, particularly in the region of impurity
conductivity. In the case of x-ray irradiation new vacan-
cies are formed. The previously existing cation vacancies
combined into complexes, and consequently σ decreases.
-- P. Meyklyar

Card 2/2

RUMANIA/Electronics - Dielectrics.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6400

Author   : Stanomir D.
Inst   : ▲
Title   : Ferroelectric Phenomena in Barium Titanate and Other
               Materials

Orig Pub   : Telecomunicatii, 1959, 3, No 2, 72-77

Abstract   : Survey of ferroelectricity and its technical applications.
               The presently known ferroelectrics are described.

Card 1/1

EAST GERMANY/Electronics - Semiconductors.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6421

Author   : Dorendorf Heinz

Inst   : Siemens & Halske, Munich, West Germany

Title   : Investigation of p-n junctions in Germanium with Different
               Density of Recombination Centers.

Orig Pub   : Z. Angew. Phys., 1959, 11, No 5, 162-164

Abstract   : Nickel in concentrations N_t up to 3×10^{14} cm^{-3} was in-
               troduced into germanium specimens, containing p-n junctions
               (obtained by alloying during drawing). Nickel was introdu-
               ced by diffusion. The properties of such junctions, namely
               the lifetime τ, the barrier current I_s, and the photocur-
               rent I_L were investigated as a function of N_t. The results
               were compared with the calculated values given by Clark
               for conductivity-damping processes. The lifetime on the

Card 1/3

p-n junctions was measured by two methods: that of
Kingston (Referat Zhur Fizika 1955, No 9, 19700), and that
of Lederhandler and Gigoletto (Referat Zhur Fizika 1956,
No 3, 7675). The calculated and experimental dependences
of τ_n and τ_p on N_t are shown graphically. At small
N_t, the experimental data are found to be considerably
lower than the theoretical ones, and this is associated
with the surface recombination and the presence of recom-
bination centers of unknown origin. In the regions of
large N_t, the data of the two methods differ somewhat.
However, the most interesting is the fact that the measu-
red values of τ follow the curve of τ_p, and not of τ_n,
as would be expected in the measurement of the temporal
damping process. This unexpected result is explained by
the peculiarities of the measurement methods. The barrier
current I_s has saturation even at large N_t. This means
that in spite of the high N_t, the unsaturated recombination

Card 2/3

current is small compared with the diffusion current.
The value of I_s increases in accordance with the calcu-
lation, but the experimental curve is shifted upward by
a constant quantity, this being associated with the sur-
face currents. In accordance with theory, I_L is propor-
tional to the diffusion length at constant illumination.
-- V.V. Ostroborodova

Card 3/3

POLAND/Electronics - Semiconductors.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6422

Author   : Majewski, Z., Sikorski, S., Swiderski, J.
Inst   : -
Title   : On the Relation Between Anomalous Resistivity and Con-
              centration Gradient of Carriers in Germanium

Orig Pub   : Bull. Acad. polon. sci. Ser. sci. techn., 1959, 7, No 6,
              401-406

Abstract   : In the measurements of the specific electric resistivity
              of Ge by the two-probe method, the results are considera-
              bly higher than the specific resistivity of pure Ge.
              These anomalous values of the resistance depend on the
              voltage and on the direction of the current used in the
              measurements. It has been noted that this phenomenon is
              accompanied by the appearance of a volume photo-emf the
              behavior of which is connected with a character of the
              nonlinearity of the specific electric resistivity, and it

Card 1/2

POLAND/Electronics - Semiconductors.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6422

              cannot be explained with the aid of the Lashkarev-Romanov
              theory (Referat Zhur Fizika 1957, No 3, 7045) or the
              Tautz theory (Referat Zhur Fizika 1955, No 11, 24903).
              Investigations have been made, indicating the appearance
              of injection of minority carriers from one portion of the
              inhomogeneous specimen of germanium to another. An hypo-
              thesis is advanced that this is the essential reason for
              the occurrence of anomalous values of resistance. The
              application of measurements of the photo-emg for simple
              identification of the sections of anomalous resistance is
              proposed.

Card 2/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6432

Author   : Henniger, H., Hultschig, H., Heratsch, G.

Inst   : VEB Plant for Construction Elements for the Communication
             Engineering "Carl von Ossietzky" Berlin

Title   : On the Dependence of the Specific Resistivity of Ferrites
             on the Pressing Pressure.

Orig Pub : Exptl. Tech. Phys., 1959, 7, No 2, 90-91

Abstract :   An investigation was made of the influence of pressing
             pressure on the specific electric resistivity of Ni-Zn
             ferrites at 20° C. Previously sintered and then subse-
             quently powdered material was subjected to pressing. As
             the pressure was increased from 100 to 500 kg/cm^3, the
             resistance of the ferrite increased liearly from $\sim 10^5$
             to 10^3 ohm-cm. -- Ye.G. Ponyatovskiy

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6434

Author   : Koseh, F., Horak, J., Kaspar, J.

Inst   : Technical or Chemical College, Pardubice, Czechoslovakia

Title   : Conductivity of Copper Tungstate

Orig Pub : Collect. Czechsl. Chem. Communs, 1959, 24, No 6, 2034-
             2037

Abstract : Sintered specimens of $CuWO_4$ were used to investigate the
             dependence of the conductivity on the temperature. From
             this dependence, the energy of activation was calculated;
             on the basis of the analysis of the lines and the Debye
             patterns of certain conducting specimens of $CuWO_4$, the
             strength of the Cu -- O -- W bond is evaluated.

Card 1/1

EAST GERMANY/Electronics - Semiconductors.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6436

Author   : Adirowitseh, E.I.
Inst   : -
Title   : Correction to the Article "Effect of Internal Emission
             on the Distribution of a Strong Field in a Solid"

Orig Pub   : Z. Phys., 1959, 155, No 5, 635

Abstract   : Refers to Referat Zhur Fizika 1960, No 1, 1369.

Card 1/1

POLAND/Electronics - Semiconductors.   H-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6452

Author   : Rohleder Jozef

Inst   : Physical Chemistry Faculty, Polytechnic, Wroclaw, Poland

Title   : Further Investigations of the Eternal Photoeffect in KCl
             Crystal, Containing Centers of Metallic Thallium (KCl, Tl)

Orig Pub   : Roczn, Chem., 1959, 33, No 2, 411-418

Abstract   : From the sign of the thermal emf, it was determined that
             the current carriers in crystals KCl, Tl are holes. In
             the volt-ampere characteristics of the photocurrent, up
             to gradients of 2×10^{4} v/cm, there is no saturation and
             one can therefore assume that the charge is $Q = NewE/d$,
             where N is the concentration of the current carriers, e the
             carrier charge, E the intensity of the field, wE the avera-
             ge shift, and d the distance between electrodes. Using

Card 1/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6452

this formula, it is possible to determine the product Nw. Assuming the w is the same as for the electrons in crystals with F centers and (according to Pohl's data) its value is 10^{-7} -- 10^{-8} mm^2/v, we obtain $N = 10^{12}$ to 10^{13} cm^{-3}, which is 10^6 to 10^5 times smaller than the concentration of Tl. Experiment shows also that the current density (meaning also Nw) is almost independent of the concentration of Tl. It is concluded therefore that as the concentration is increased N increases and w decreases. The latter may be connected with the fact that some of the Tl atoms play the part of traps. -- A. Shneyder

Card 2/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6453

Author : Rohleder Jozef

Inst : Physicsl Chemistry Faculty, Polytechnic, Wroclaw, Poland

Title : Band Model of KCl Crystals, Containing Centers of Metallic Thallium (KCl, Tl).

Orig Pub : Roczn, chem., 1959, 33, No 2, 419-427

Abstract : It is proposed that in the KCl lattice one should distinguish between two position of Tl atoms: 1) Tl atoms around which are located vacant anion sites; 2) Tl atoms, near which there are no corresponding vacant sites. The former have an acceptor character, and are responsible for the photoconductivity. The concentration is on the order of 10^{13} -- 10^{14} cm^{-3} and they are located 2.26 ev above the edge of the valence band. The other levels are

Card 1/2

POLAND/Electronics - Semiconductors. H-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6453

located 5.5 ev below the conduction band and are respon-
sible for optical absorption. Upon absorption of light
with h $\nu = 4.0$ ev, only excitation of the centers takes
place and there is no photoconductivity. Upon absorption
of light with h 5.2 ev, weak photoconductivity is produced,
possibly due to the presence of thermal effects. -- A.
Shneyder

Card 2/2

CZECHOSLOVAKIA/Electronics - Semiconductors. H-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6462

Author : Trlifaj Miroslav

Inst : Physics Institute, Czechoslovak Academy of Sciences,
Prague

Title : Theory of Exciton Annihilation Accompanied by the Occur-
rence of Defects of a New Type and of Current Carriers.

Orig Pub : Chekhosl. fiz. zh., 1959, 9, No 4, 446-459

Abstract : An investigation was made of the process of annihilation
of excitons on vacancies and F-centers in ionic crystals.
The annihilations are accompanied by the occurrence of a
new type of center and of current carriers. General ex-
pressions are derived and evaluated for the corresponding
effective cross sections in the quasi-classical approxima-
tion.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6470

Author   : Corciovei, A.
Inst   : -
Title   : Effect of the Order on the Electric Resistivity of
              Binary Alloys.

Orig Pub   : Studii si cercetari fyz., 1959, 10, No 1, 117-131

Abstract   : A study is made of the effect of ordering phenomana on
              the specific resistivity of binary alloys with almost
              equal concentrations of components, upon approach to
              complete ordering (Referat Zhur Fizika 1959, No 12,
              27784). In the investigation, one begins with a poten-
              tial difference from the Nordheim potential (Nordheim L.
              Ann. Phys. Lpz. (5), 1931, 9, 607). The Mathiessen rule
              is discussed and it is indicated that actually the more
              correct one is the Kohler inequality (Kohler K., Z. Phys.
              1949, 126, 495). In the discussion of the consequences

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6470

              of ordering at low temperatures, certain already known
              results have been confirmed (Dienes G., Journal of
              Applied Physics, 1951, 22, 1020), and several qualitative
              remarks are made for temperatures close to the Curie
              temperature.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6481

Author   : Draganessu Minai, Stancu Gheorghe
Inst   : -
Title   : Proposals Concerning Terminology of Electronic Devices

Orig Pub   : Automat. si electron., 1959, 3, No 2, 76-80

Abstract   : The terminology project was proposed by the authors at
               the Conference on Communication Problems, held at Bucha-
               rest Polytechnic Institute on 18 -- 19 October 1958.
               It is based on the following classification of electronic
               devices. 1. Electronic tubes. A, Vacuum tabes. 1.
               Ordinary tubes (diodes, triodes, tetrodes, etc). 2.
               Electron beam tubes. a) Cathode rays tubes (oscillos-
               copes and oscillographs, electronic switches, tubes with
               charge storage, etc.). b) Transmitting television tubes
               (iconoscope, orthicon, vidicon, etc.). c) Generator
               microwave tubes (electrostatic -- klystron, reflex

Card 1/2

               klystron, traveling wave tube, backward wave tube, etc.).
               3. Magnetrons (diode, with slotted anode, with resonant
               cavities etc.). B. Gas filled tubes. 1. Glow discharge
               (indicator, stroboscopic, stabilizers, thyratrons with
               cold cathode, etc.). b) With mercury cathode (mercury
               arc rectifiers, ignitrons, etc.). c) Counters (Geiger-
               Muller, proportional, etc.). C. Photoelectric devices
               (vacuum photocells, gas-filled photocells, photomulti-
               pliers, electro-optical converters). II. Semiconductor
               devices. i. Diodes (point-contact, junction, etc.,
               selenium rectifiers, Cu_2O rectifiers). 2, Transistors
               (triodes, tetrodes, spacistors, etc. 3. Photocells
               (photoresistances, photodiodes, phototriodes). 4. Vari-
               trons (thermistors, etc.). 5. Detectors. III. Devices
               based on superconductivity -- cryotron.
               Bibliography, 28 titles.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6484

Author   : Comsa George
Inst   : -
Title   : Variation of the Work Function of Nickel with Temperature

Orig Pub   : Studii si cervetari fiz., 1959, 10, No 1, 163-171

Abstract   : Using the method of shifting the characteristics, the
               temperature coefficient of the work function of nickel
               was determined in the temperature range from 720 to
               1025° K. It was found that this coefficient is (-2.65 ∓
               0.03) x 10⁻⁵ ev/deg. Analysing the effect of the resi-
               dual gases and the results of the measurements, the author
               reaches the conclusion that at the given experimental
               conditions (pressure 1.2 x 10⁻⁹ mm mercury) they introdu-
               ce practically no errors in the measurement data.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6485

Author   : Comsa George
Inst   : -
Title   : On the Value of the Temperature Coefficient of the Work
               Function, Determined on Polycrystalline Surface of Nickel.

Orig Pub   : Studii si cercetari fiz., 1959, 10, No 1, 145-162

Abstract   : An analysis is made of the significance of the results
               obtained by employing the method of the shift of the
               characteristics to determine the temperature coefficient
               of the work function of a polycrystalline surface of
               nickel. Two problems were investigated: 1. Effect of
               the "spot field" on the electron currents from different
               phases of the crystallytes of polycrystalline surfaces.
               2. The effect of the temperature coefficient of the work
               function of different phases of the crystallytes on the
               measured temperature coefficient. Bibliography, 12 titles.

Card 1/1

RUMANIA/Radio Physics - Electronic and Ionic Emission.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6486

Author   : Iosifescu, B.
Inst   : -
Title   : Temperature Variation of the Work Function of Molybdenum

Orig Pub   : Studii si cercetari fiz., 1959, 10, No 1, 177-186

Abstract   : An experimental investigation was made of the electron
              emission of polycrystalline molybdenum at temperatures
              700 -- 1100° K. This investigation has made it possible
              to establish that the temperature coefficient of the work
              function equals in this case $(7.86 \pm 0.04) \times 10^{-5}$ ev/deg.
              It is noted that the measurement accuracy obtained in
              this work is two orders of magnitude higher than in prece-
              ding investigations by other authors.

Card 1/1

POLAND/Radio Physics - Electronics and Ionic Emission.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6488

Author   : Lewenstein Krystyn
Inst   : -
Title   : Processing and Investigation of a Thorium-Oxide Cathode

Orig Pub   : Zesz. naue. Politechn. warsz., 1958, No 38, 71-103

Abstract   : The author describes the technology and the properties of
              thorium-oxide cathodes. Also described are the methods
              of preparation of the direct-heated cathode $W-ThO_2-Th$ and
              methods of investigation of the emission properties of
              these cathodes. Results of the investigations are repor-
              ted.
              Bibliography, 37 titles.

Card 1/1

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6497

Author   :   Brinkmann, E., Deichsel, H.

Inst   :   Physics Institute, University, Mainz, West Germany

Title   :   On the Additivity of the Photocurrent and the Secondary
                Electron Emission Current.

Orig Pub   :   Z. Phys., 1959, 156, No 2, 159-162

Abstract   :   In 1925, Dember (Dember H.Z. Phys. 1925, 33, 529) observed
                that there is no additivity of the photocurrent in the
                secondary electron emission current from aluminum, exposed
                to light and bombarded by electrons (for example, photo-
                current in the presence of simultaneous electron bombard-
                ment could increase by approximately 150 times the photo-
                current in its absence). In 1956, Eckertova (Referat Zhur
                fizika 1957, No 4, 9770) established the absence of this

Card 1/3

                effect (the so-called Dember effect) in aluminum and
                magnesium, both in the form of pure metallic films (ob-
                tained by evaporation in vacuum), and upon their weak
                oxidation. The authors of the present paper have repeated
                Dember's measurements under experimantal conditions as
                close as possible to the original ones, under two different
                modes, close to that of Dember, and close to that of
                Eckertova. This verification has shown that in the case
                of pure metallic surfaces, the additivity is not violated,
                whereas for an oxidized surface, the Dember condition
                gives absence of additivity, while the Eckertova condi-
                tion gives the presence of additivity. Since in Dember's
                experiments the surface of aluminum, as indicated by the
                authors, was undoubtedly oxidized (bulk aluminum), one
                must assume that the "Dember effect" exists for oxidized
                aluminum. A direct reason for this is considered by the
                authors to be the internal photoeffect in the Al_2O_3 film,

Card 2/3

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6497

                which increases its longitudinal conductivity. The
                presence of such an increase under the influence of
                light was demonstrated by the authors by direct experi-
                ments on a free film of Al_2O_3.

Card 3/3

RUMANIA/Radio Physics - Electronic and Ionic Emission.   I-

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6502

Author   :   Badarau, E., Petrescu Paul
Inst   :   -
Title   :   Phenomenon of Exoelectronic Emission.

Orig Pub   :   Studii si cercetari fiz., 1959, 10, No 1, 187-192

Abstract   :   Survey article. Bibliography, 25 titles.

Card 1/1

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6503

Author   :   Sujah Bogdan

Inst   :   Institute of Physics, Polish Academy of Sciences,
                Institute of Experimental Physics of the Bierut
                University, Wroclaw, Poland

Title   :   Parent Exoelectronic Emission, Caused by Liberation of
                Water of Crystallization with Increasing Temperature.

Orig Pub   :   Chekhosl. fiz. zh., 1958, 8, No 5, 616-617

Abstract   :   In some cases, when using open counters, the liberation
                of the water of crystallization upon heating of the salt
                is accompanied by an increase in the counting rate, which
                can be mistaken for exoelectronic emission. In a similar
                manner, when working with counters in the region of the
                so-called prolonged discharge (at increased voltage),

Card 1/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6503

                they register only α particles and water vapors, and not
                electrons and ions. For this latter case, the author
                gives the dependence of the counting rate on the tempera-
                ture in heating of cuprous oxide, and this dependence dis-
                plays three maxima corresponding to a jump-like dehydra-
                tion of the cuprous oxide.
                Bibliography, 9 titles.

Card 2/2

Author   : Rezanka Ivan
Inst   : -
Title   : Stray Fields of Conical Pole Pieces

Abstract   : The author calculates the stray field of conical pole
              pieces, intended for the production of an inhomogeneous
              sector magnetic field, which varies in the meridian plane
              in inverse proportion to the distance from the axis of the
              field. Assuming that the pole pieces are not bounded in
              the radial direction and that their surfaces are equipo-
              tential, and also assuming that the air gap between them
              is small, the author reduces the problem of finding the
              stray field to the solution of the plane problem, obtained
              by Coggeshall (Coggeshall N.D., Journal of Applied Physics,
              1947, 18, 855). -- V.A. Bazakutsa

Card 1/1

Author   : Buhl, R.

Inst   : The University, Tubingon, West Germany

Title   : Interference Microscopy with Electron Waves

Abstract   : The author describes the fundamental principles of cons-
              truction of an electronic interference microscope using
              an electronic biprism, previously described by Mullenstadt
              and his coworkers (Referat Zhur Fizika 1955, No 9, 19595;
              1956, No 7, 20269; 1957, No 5, 12304). Two possible
              schemes are considered for the path of the electron beams:
              with a biprism located between the object and the objecti-
              ve, and the biprism located behind the objective. The
              brightnesses of the interference pattern in both cases are

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6523

compared. The former scheme was selected for the experi-
ments. A brief description of the instrument is given.
The objective and projective used are electrostatic lenses,
which make it possible to obtain a resolution better than
100 Å (working voltage 50 kv). The biprism consists of
a thin metallized quartz thread (thickness $<$ 1 micron),
located between two electrodes. Electron images of the
edge of a carbon film in crystals MgO, shaded with gold
and aluminum, were obtained, with superimposed interferen-
ce patterns. The shift of the interference fringes on the
boundaries of the objects makes it possible to phase shifts
of the electron beams and from them, the internal potentials
of the crystals. This method was used to determine the
average internal potnetials of gold, silver, aluminum,
zinc sulfide, etc.
Bibliography, 19 titles. -- V.I. Milyutin

Card 2/2

RUMANIA/Radio Physics - Propagation of Radio Waves.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6537

Author   : Draganescu, M.
Inst   : -
Title   : Dependence of the Amplification Factor of a Triode on Its
               Operating Condition

Orig Pub   : Bul. Inst. politehn. Bucuresti, 1956, 18, No 3-4, 317-325

Abstract   : As is known, the amplification factor of a triode depends
               on its operating condition, but this dependence is less
               important than the change of its two other parameters
               (the internal resistance and the transconductance) with
               changing operating conditions. A previously derived ex-
               pression (Referat Zhur Fizika 1957, No 10, 25894) for the
               amplification factor of the triode, is given, in the form
               $\mu = 1/)p - qU_g/U_a)$ (hwere $p > q$, $q < 0$, and $U_g < 0$).
               The change in μ is due to the presence of space charge
               between the electrodes and inhomogeneity of the electric

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6537

field on the cathode. In the present work, the author
investigated the effect of the phenomenon of the return
of the electrons from the grid on the value of the am-
plification factor of the triode. Formulas are given for
the plate current and for the amplification of the triode,
taking this phenomenon into account.

Card 2/2

CZECHOSLOVAKIA/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6546

Author   : Kracih Jiri
Inst   : -
Title   : Effective Surge Impedance of a Low Pressure Discharge

Orig Pub   : Slaboproudy obzor, 1959, 20, No 4, 217-222

Abstract   : The investigated discharge was connected in parallel with
              a complex impedance and in series with another complex im-
              pedance. The equations that describe the phenomana in
              the plasma discharge are linearized and used to determine
              the impedance of the plasma. The impedance is a function
              of the frequency of the current flowing, of the variation
              of the applied voltage, and of quantities that describe
              the equilibrium state of the plasma and the parameters of
              the external circuit.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6561

Author   : Hettner, G., Wagner, H.

Inst   : Institute of Theoretical Physics, Technical College,
              Munich, West Germany

Title   : Fourier Analysis of Electric Microfields in a Plasma. I.

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 89-95

Abstract   : The probability distribution of the amplitudes of the local
              electric field in a plasma is calculated with the aid of
              the Fourier integral transformation. The integrals invol-
              ved in the calculations are found to be divergent. To
              eliminate the divergences, three essentially cutoff para-
              meters are introduced. Upon integration over the distance,
              the upper limit is taken to be the Debye radius, although
              this does not agree with the formulation of the problem,

Card 1/3

EAST GERMANY/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6561

              since the calculations do not take into account the in-
              teraction between the charged particles. At small dis-
              tances, one excludes from the region of integration a
              spherical volume, the arbitrary radius of which, s, serves
              as the lower limit of integration and defines the upper
              boundary of the spectrum. All this is still not enough
              to eliminate the divergences. One therefore introduces the
              condition that the phases of all the electrons should be
              included within an arbitrary finite time interval T.
              If T goes to infinity, the results lose their meaning.
              The final probability distribution obtained for the fluc-
              tuations of the field amplitudes is expressed by the
              Gauss formula. The parameter entering into this formula
              is found to be proportional to the arbitrary time interval
              T. It is proposed to assume for T the duration of the con-
              sidered physical process. The results depends also on the

Card 2/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6561

cutoff radius s, the meaning of which is not explained
at all, but it is stated that this dependence is weak.
-- D.A. Frank-Kamenetskiy

Card 2/2

RUMANIA/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6567

Author   : Chulli, S., Miky, M.
Inst   : -
Title   : Plasma Oscillations in an External Static Magnetic Field

Orig Pub   : Rev. phys. Acad. RPR, 1958, 3, No 3-4, 211-218

Abstract   : Using the Boltzmann kinetic equation, the authors investi-
                 gate the function of static charge distribution in the
                 gas, and also small derivations from this distribution.
                 The stationary solution is considered for a cylindrical
                 symmetrical plasma. It is proposed that the deviation
                 from the stationarity is due only to the electrons. In
                 this case it is possible to separate the variables, and
                 this leads to a Maxwellian velocity distribution and to a
                 spatial part, which varies at large distances as $1/r^4$.
                 In view of the assumed smallness of the deviation from the
                 equilibrium position, the disturbances of the plasma are

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6567

        taken into account only in the deviations of first-order
moments (from Maxwellian distribution), while higher-
order moments are approximated by moments calculated with
the aid of the Maxwellian distribution of the stationary
state. The equations are linearized, and a system of
differential equations is obtained for the Fourier compo-
nents of the magnetic field, the asymptotic form of the
solutions of which is investigated. The dispersion rela-
tions are obtained by reconciling this asymptotic solution
with the regular solution at the origin,. -- Ye.Ya.
Lantsburg

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6576

Author   : Wojaczeh, K.

Inst   : Physical-Technical Institute, German Academy of Sciences,
               Research Community, Berlin

Title   : Calculation of the Growth of the Number of Layers in the
               Diffusion Theory of Running Striations

Orig Pub   : Monatsber. Dtsch. Akad. Wiss. Berlin, 1959, 1, No 1, 23-
               26

Abstract   : An experimental investigation of the running striations in
               a discharge in argon at low pressure has shown that the
               frequency of oscillations in these striations is closely
               connected with the increase in the number of layers.
               This experimental fact is not taken into account in the
               theory, since all the calculations are produced for real

Card 1/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6576

                 (and not complex) values of the wave number. In the case
of running layers, their length (along the tube) should
diminish slowly with increasing frequency of the oscilla-
tion, and the number of striations increases monotonical-
ly. However, experiments show that under identical dis-
charge conditions, the length of each layer increases with
increasing oscillation frequency, and the number of layers
goes through a maximum, the position of this maximum also
depending on the frequency of the oscillations in the
striations. Theory and experiment contradict each other
at this point. Elementary calculations of the number of
newly produced charge carriers, in which a count is taken
of the possibility of step-like ionization, make it possi-
ble to obtain for the limiting case the length of each
individual striation. The calculated values correspond
approximately to the values obtained from experiment.
However, the contradiction between the experiment and

Card 2/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6576

                 theory is not completely eliminated, and the diffusion
theory of running striations requires further development.
-- N.A. Kaptsov

Card 3/3

Author   : Hollander Egon Felix

Inst   : Welding Research Institute, Bratislava, Czechoslovakia

Title   : Application of the Thermodynamics of Irreversible Proces-
               ses to the Welding Arc

Orig Pub   : Ceskosl. casop, fys., 1959, 9, No 1, 66-73

Abstract   : On the basis of the equations of thermodynamics, an at-
               tempt is made to explain quantitatively the process of
               self-adjustment of the welding arc. The theory is em-
               ployed for the case of a linear arc characteristic, fol-
               lowed by consideration of the steady-state arc, and final-
               ly, a general derivation is given for an equation which
               determines the automatic regulation of the arc. From this
               conclusion it is seen that all the properties of the

Card 1/2

               welding arc, contributing to its automatic regulation,
               follow naturally from thermodynamic laws. Each given
               mode of arc can be reached by changing one external para-
               meter, for example the power of the current source, the
               current the rate of motion of the electrode, or its rate
               of melting.
               Bibliography, 12 titles. -- N.A. Kaptsov

Card 2/2

POLAND/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6585

Author   : Bader, J.

Inst   : Faculty of High Voltages, Polytechnic, Warsaw

Title   : Experimental Investigation of the Post-Arc Resistance of
              Small Spark Gaps

Orig Pub   : Arch. elektrotechniki, 1959, 8, No 1, 133-155

Abstract   : A circuit is described for measuring the post-arc resis-
              tance of small spark gaps. This circuit was used to measu-
              re the post-arc resistances from 0.3 to 1.8 mm at pulsed
              currents of 0.1 -- 4 kiloamperes and at accompanying cur-
              rents of 50 -- 560 amperes.

Card 1/1

CZECHOSLOVAKIA/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6595

Author   : Hermoch Vladimir

Inst   : Institute of Technical Physics, Czechoslovak Academy of
              Sciences, Prague

Title   : Channel of Pulsed High-Current Electric Discharge

Orig Pub   : Ceskosl. casop. fys., 1959, 9, No 2, 141-149

Abstract   : An investigation was made of the development of a channel
              of pulsed high-current discharges (duration 100 microse-
              conds, maximum current up to 10,000 amperes) as a function
              of the current strength, the distance between electrodes,
              and the material of the electrodes with simultaneous measu-
              rement of the electric parameters (voltage across the dis-
              charge gap, voltage gradient). An analysis of the results
              of the measurements of the electric conductivity of the

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6595

plasma (copper electrodes) shows that during the discharge process there is a change in the temperature and pressure of the plasma. The compression of the channel depends to a considerable degree on the evaporation of the electrodes and on their heat conduction. The relative influence of these factors changes with distance from the electrodes, i.e., the degree of compression of the channel depends on this distance. The evaporation of the electrodes is periodic in nature. The radial components of the velocities depend on the rate of evaporation. The intense glow of the vapors (for easily-melting elements) did not make it possible to observe the shape of the channel. Bibliography, 20 titles. -- S.F. Shushurin

Card 2/2

EAST GERMANY/Radio Physics - Radio Frequency Measurements.   I-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6612

Author   : Neumann Werner, Peters Arnold, Rademacher Karl, Rompe Robert

Inst   : German Academy of Sciences, Berlin, Physical Technical Institute, Division of Radiation Sources.

Title   : Description of a Setup for Obtaining a Plasma Beam in Argon with Indestructible Electrodes and Determination of the Distribution of Temperature in the Plasma Beam.

Orig Pub   : Exptl. Techn. Phys., 1959, 7, No 2, 77-84

Abstract   : The use of a high temperature electric arc for technical purposes is made difficult, since the streamer of such an arc contracts at the anode into a spot of small diameter, and the anode is rapidly destroyed. This obstacle is eliminated by using the so-called plasma beam, in which a

Card 1/4

gas in the state of a high temperature plasma, is blown
at high velocity (the Mach number reaches several units)
through a more or less narrow channel in the anode of the
arc. Results are given, obtained up to now in the inves-
tigation of a plasma beam penetrating through an opening
in a copper anode of a strong current (up to 427 ampere)
arc in argon, with 500 liters of argon being blown through
this opening per hour. Behind the anode is placed a spe-
cial furnace, in which the plasma beam is used to melt
refractory substances. To investigate the distribution of
the temperature in the plasma beam, the furnace was removed
and the beam was photographed through a metallic inter-
ference filter (λ = 5560 Å, half width of the transmitted
portion 100 Å). To obtain blackening marks on the photo-
emulsion, and for absolute measurements of the radiation
intensity, the same apparatus was used to photograph,
through gray light filters of different transmission, the

Card 2/4

center portion of the arc of a xenon lamp of superhigh
pressure XF3,000, the radiation temperature of which
was established, in turn, by comparison with a black-
body radiation. The photographs of the spectrum of the
plasma arc in the region from 4100 to 7500 Å were made
by a three-prism glass spectrograph with an average dis-
persion of 15 amperes per millimeter. The strength of
the discharge current was established with the aid of
resistances, cooled with running water, the length of the
section of the plasma beam with a temperature of 9,000° K
and above (judging from the distance from the point at
which the temperature was measured to the axis of the
beam) was found to be 15 mm. Observation with the unpro-
tected eye made it possible to see the continuation of
the plasma beam with a lower temperature, up to 30 cm.
The power dissipated in the beam was determined calorime-
trically. A tungsten wire 2 mm in diameter was melted

Card 3/4

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6612

under the conditions of the experiments described only in
individual drops, which were transformed into balls 3 mm
in diameter. -- N.A. Kaptsov

ard 4/4

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6617

Author   : Mroziewicz, B.

Inst   : Institute of Fundamental Engineering Problems, Polish
               Academy of Sciences.

Title   : Technology of Fused p-n Junctions from the Point of
               View of Their Form

Orig Pub   : Arch. elektrotechniki, 1959, 8, No 1, 169-200

Abstract   : The author considers the influence of the shape of p-n
               junction on the value of the limiting frequency and the
               current gain   of transistors, prepared by the fussion
               method. It is shown that the necessary condition for
               attaining high values of the foregoing parameters is
               the production of plane p-n junctions. A brief descrip-
               tion is given of the production of p-n junctions by the

Card 1/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6617

method of fussion with separation into three stages:
milting, fussion, and recrystallization. It is noted
that the form of the junctions obtained is closely rela-
ted with the wetting of the germanium by the fused metal
and with the rate of fussion of the latter. In addition,
it depends on the depth of the junction and on the orien-
tation of the plane of the plate relative to the crystal-
lographic axis. The question of the wetting is considered
from the physical point of view. The wetting can be good,
if one insures suitable purity of the contacting surfaces.
The oxides are particularly harmful in this case. To
eliminate these oxides, the fussion process is effected in
an atmosphere of hydrogen or in the presence of a flux
around the surfaces in contact. The wetting can also be
improved by introducing into the indium a small amount of
a metal that reduces its surface-layer energy. The fusion
process develops properly in that case, when it proceeds

Card 2/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6617

sufficiently slowly. Such a condition can be attained
by increasing the temperature slowly, or by introducing
into the indium a metal which makes the melting of the
germanium difficult. Experiments have shown that addition
of lead facilitates considerably the preparation of flat
p-n junctions. Also considered is the influence of the
orientation of the pane of the germanium plate on the
form of the junction, and it is shown that the most suita-
ble plane for production of flat junction is the 111 plane.
It is shown that the attainable geometry of the junction
is the flatter, the closer the junction is to the surface.
The depth of penetration can be regulated by selecting the
process temperature or the volume of the metal which is
fused in. The experiments performed are described and
methods are given for observing the p-n junctions.
Bibliography, 24 titles.

Card 3/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6640

Author   : Wienhold, H., Ohm, M.

Inst   : VEB Vakutronik, East Germany

Title   : Stabilization of the Gain of Secondary-Electron Multipliers
              in Scintillation Counters.

Orig Pub   : Kernenergie, 1959, 2, No 4, 325-328

Abstract   : A scheme is described for stabilizing the gain of secon-
              dary-electron multipliers in supply-voltage fluctuations,
              based on suitable changes in the voltages on one of the
              dynodes, the use of which makes it possible to reduce the
              requirements concerning stabilization of the high voltage
              by a factor of 10.   -- A.M. Kharchenko

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6647

Author   : Paty Libor, Neuzilova Radmila

Inst   : Charles University, Prague Czechoslovakia

Title   : A New Construction of High-Vaccum High-Speed Pump.

Orig Pub   : Ceskosl. casop. fys., 1958, 8, No 6, 740-742

Abstract   : The diagram of the pump is given along with the results
              of an investigation of its operation, Pumping begins
              at a pressure 1×10^{-2} mm mercury. The rate of pumping
              increased to a maximum of 18 liters per second at a pres-
              sure of approximately 10^{-5} mm mercury. When disconnected
              from the forevacuum for a short time, pumping continued
              through the adsorption effect in the cathode space. It is
              established that the fraction of adsorption is predominant
              at high pressures and at large magnetic fields.

Card 1/2

CZECHOSLOVAKIA/Radio Physics - Applications of radiophysical methods. I

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6647

At pressures less than 4×10^{-4} mm mercury the pumps operate on the basis of transport processes and iron recombination processes. -- V.G. Zheravov

Card 2/2

CZECHOSLOVAKIA/Radio Physics - Application of Radiophysical Methods. I

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6648

Author   : Paty Libor, Neuzilova Radmila
Inst   : -
Title   : A New Construction of a High Vacuum High Speed Ion Pump

Orig Pub : Chekhosl. fiz. zh., 1958, 8, No 6, 746-747

Abstract : See Abstract 6647.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6649

Author   : Kiliszek, C.
Inst   : -
Title   : Absorption of Gases by Means of NiBa Gas Absorbers.

Orig Pub   : Elektronika, 1957, 3, No 12, 55-56

Abstract   :   The absorbing ability (efficiency) of a gas absorber is
               expressed by the amount of absorbed gas per unit mass of
               absorption. The effeciency is not constant even from ab-
               sorbers of the same type, but from a different source.
               One of the factors that determine the properties of a
               layer of gas absorber is the amount of gases liberated
               during the time of pulverization. In this investigation,
               a study was made of the connection between the pressure
               of the gases liberated during pulverization of the gas
               absorber and the efficiency of samples of NiBa gas absor-
               ber, obtained from three different sources.

Card 1/2

               From the data one can conclude that the absorber that
               liberates a small amount of gas during pulverization
               does not have high efficiency.

Card 2/2

POLAND/Radio Physics - Application of Radiophysical Methods.   I-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6656

Author   : Kalinski Jerzy
Inst   : -
Title   : Electronic Apparatus for the Measurement of Weak Inten-
             sities of Infrared Radiation

Orig Pub : Zesz. nauk. Politechn. warsz., 1958, No 38, 33-70

Abstract : Description of an electronic device for the measurement of
             infrared radiation from stars, based on the application
             of photo-resistances, sensitive to the infrared, as radia-
             tion detectors.
             Bibliography, 38 titles.

Card 1/1

BULGARIA/Acoustics - Noise.   J-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6717

Author   : Raev, A., Popova, L.

Inst   : Institute of Physics, Sofia University, Bulgaria

Title   : On the Voltage-Tunable Operation of Magnetrons with
             Resistive External Circuit.

Orig Pub : Dokl. Bolg. AW, 1958, 11, No 6, 441-444

Abstract : An investigation was made of the dependence of the active
             component of the alternating voltage between segments of
             a slotted magnetron V_a on the resistance and capacitance
             of the external circuit. A simple calculation shows that
             the quantity V_a depends on $R' = R/(1 + \omega^2 C^2 D^2)$, where
             R is the resistance of the external circuit, C the capaci-
             tance between the segments, and ω the circular frequency
             of oscillations. The experiments were carried out on

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6717

         three two-segment Phillips type TAM1.5/50L magnetrons
         with anode radius 0.5 cm and cylinder height 2 cm. It
         was established that in the generating mode the anode
         current is almost proportional to V_a. The results of
         the experiment demonstrate taht I_a (meaning also V_a)
         depends on R and C through R', which confirms the initial
         premises. Simultaneously, the variation of the curve I
         $f(V_a)$ which characterizes the dependence of the space
         charge density of the spoke on the voltage maintaining it.
         It is noted that the space charge density of the spoke
         reaches a certain limit with increasing V_a. The results
         obtained confirm the hypothesis that a self-maintaining
         electron spoke is produced in the magnetron. -- E.Ya.
         Pastron

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6739

Author   : Breitenhuber, L.
Inst   : -
Title   : On the Radiation of a Circular Wave Guide which is
              Inclined Relative to a Metal Screen

Orig Pub   : Z. Phys., 1959, 155, No 4, 441-452

Abstract   : The problem is considered of the radiation from a round
              wave guide, provided on the end with an infinite plane
              metallic flange, and the direction of the normal to the
              flange makes an arbitrary angle α with the longitudinal
              axis of the wave guide. The intensity of the electric
              field in the far zone is written with the aid of a for-
              mula which is a vector analogue of the Huygens principle,
              in terms of the integral over the surface of the radiat-
              ing opening of an expression, which includes the distri-
              bution function of the electric field in the output

Card 1/3

aperture and a factor that takes delay into account.
In calculating this integral it is assumed that the
influence of the arising higher modes on the distribu-
tion function of the electric field in the output aper-
ture is negligibly small and can be disregarded. In
addition, the integration over the elliptical region
of the output aperture is replaced by integration over
a circular region, corresponding to the transverse cross
section of the wave guide. With this, the expansion of
the integrand in a series of Bessel functions makes it
possible to use in the integration the orthogonality
conditions of these functions to obtain the sought direc-
tivity pattern in closed form. The resultant formulas
describe directivity patterns for the propagation of an
arbitrary type of TM or TE wave in the wave guide. In
the case of a type TE_{11} mode and a wave guide with dia-
meters 0.75α , where α is the wavelength in the air,

Card 2/3

the computed diagrams for values of $\alpha = 0°$, $30°$, and $60°$
are given for the polarization of the vector E, coinciding
with the direction of the major axis of the ellipse of the
output aperture. The character of the radiation in the H
plane remains unchanged for all three cases, and the
directivity pattern in the E plane becomes highly asym-
metrical as α is increased.
Bibliography, 6 titles.   -- D.M. Sazonov

Card 3/3

POLAND/Acoustics - Ultrasonic.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6752

Author   : Pogorzelski, S.
Inst   : -
Title   : Calculation of the Effective Distance Over a Spherical
               Earth's Surface

Orig Pub   : Prace Przemysl. inst. telekomum, 1959, 9, No 26, 21-30

Abstract   : The author considers the problem of calculating the range
               of a transmitter over a spherical earth's surface in the
               interference zone under conditions of normal wave propa-
               gation. Simplifications which are typical for radar ap-
               plications are introduced in the analysis. Particular
               attention is paid to the question of the phase center of
               the transmitting antenna and a correct determination of
               the height of the suspension of the antenna over the
               earth. Formulas are obtained for the coordinates of the
               phase center, for the direction of the maximum radiation

Card 1/2

POLAND/Acoustics - Ultrasonic.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6752

               of the linear antenna, and for a plane aperture.

Card 2/2

EAST GERMANY/Acoustics - Ultrasonic.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6756

Author   : Meyer, E., Kuttruff, H., Severin, H.
Inst   : -
Title   : Experimental Determination of the Effective Reflecting
               Area of Metallic Bodies of Cylindrical Form.

Orig Pub   : Z. angew. Phys., 1959, 11, No 1, 1-6

Abstract   : A procedure is considered and results are given of an
               experimental determination, at 3.2 cm wavelength of the
               effective reflection area of metallic bodies of cylindri-
               cal form with a ratio of approximately 10 of length ℓ
               to the diameter. The dependence of the effective reflec-
               tion area on the angle of incidence of the wave and on
               the ratio ℓ/λ in the range $1.8 < 1/\lambda < 25$ was inves-
               tigated. Many of the characteristics given in the paper
               indicate a monotonic increase of the effective reflection
               area with increasing $1/\lambda$. -- A.V. Kantov

Card 1/1

CHINA/Acoustics - Ultrasonic.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6793

Author   : Huang Wu-han, Ling Jan-dah, Ho ChangOshing

Inst   : Institute of Electronics, Chinese Academy of Sciences

Title   : Faraday Rotation and Losses in Ferrites in the 3-cm Band

Orig Pub   : Uli synebao, Acta phys. sinica, 1958, 14, No 6, 431-441

Abstract   : The Faraday rotation and the losses in ferrite rods and
               disks (Ni-Mg, Mg-Mn and Ni-Zn) were measured at 9200 Mcs
               in a round waveguide at room temperature, as a function
               of the intensity of the longitudinal magnetic field.
               The Ni-Mg composition varied from pure NiF_2O_4 to $MgFe_2O_4$.
               At a sintering temperature of $1300°$ C, the best proper-
               ties are possessed by ferrites with a composition from
               $Ni_{0.7}Mg_{0.3}F_2O_4$ to $Ni_{0.8}Mg_{0.2}Fe_2O_4$. The losses in these
               ferrites are small (close to the losses in $MgFe_2O_4$).

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6793

The results of the measurements for three types of fer-
rites are given in the form of graphs and tables, on
the basis of which a detailed discussion comparison is
made of the properties. In conclusion, a survey is given
of the linear theory of the Faraday rotation of linearly
polarized waves, propagating in a wave guide with a lon-
gitudinally-magnetized ferrite.

Card 2/2

CZECHOSLOVAKIA/Acoustics - Architectural Acoustics.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6861

Author   : Hosek Jiri
Inst   : -
Title   : Measurement of Losses of Transmitted Power in Wave Guide
              Circuits, Ranging from 0.3 to 10 db.

Orig Pub   : Slaboproudy obzor, 1959, 20, No 4, 231-233

Abstract   : A procedure is described for determining the total losses
              introduced in microwave transition devices by means of an
              absorption-type power meter. The values of the power
              received by the meter directly from the generator and
              through the tested device are measured. The ratio of
              these powers gives the value of the total losses. The
              losses due to reflection can be separated from this
              quantity by calculation, using separately measured valued
              of the input coefficient of reflection from the investi-
              gated device, loaded by a non-reflecting absorber. -- A.I.
                                                          Koval'chuk
Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6885

Author   : Mezger, P.G., Strassl, H.

Inst   : Stockert, *Radio-Star Observation Station, Bonn,**
               Astronomic Institute, The University, Munster, East
               Germany

Title   : Thermal Radiation from the Moon at 1420 Mcs

Orig Pub   : Z. Astrophys., 1959, 48, No 1, 72-76

Abstract   : Results are given of observations, carried out from 30
               April, to 22 June 1958, (73 days of observation) with
               the 25-meter radio telescope of the Radio Astronomy
               Observatory of the Boon University. The conversion of
               the resultant antenna temperatures of the moon into
               effective temperatures, averaged over the moon's disk
               with allowance for the variation of its visible radius,

Card 1/2

using well known parameters of the antenna, has shown
that the moon temperature at 1420 Mcs remains constant
within ± 2% and its value is 250° K, with a possible
systematic error of ± 12%. This result is in good
agreement with the well known ideas concerning the
mechanism of thermal radio radiation from the moon, accor-
ding to which the radiation at ~ 20 cm comes from a suf-
ficiently deep layer under the moon's surface (>15 cm),
when there are no considerable temperature variations
during the course of lunation.

Card 2/2

POLAND/Acoustics - Audition and Speech.   J-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6892

Author   : Smak, J.
Inst   : -
Title   : New Results of Radio Observation of the Hydrogen Line
              at 21 cm.

Orig Pub   : Postepy astron., 1958, 6, No 4, 173-177

Abstract   : Survey of work performed in Kootwijk (Holland) in 1953 -
              1955 by a group of ratio astronomers under the general
              leadership of Oort and Van de Hulst.

Card 1/1

EAST GERMANY/Optics - Geometrical Optics.   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6930

Author   : Gosele, K.

Inst   : Institute of Technical Physics, Stuttgart, West Germany

Title   : On the Determination of the Dimensions of Noise Silencers
              Operating on the Reflection Principle

Orig Pub   : Hoch frequenztechn. und Elektroakust., 1959, 68, No 1,
              15-18

Abstract   : The advantages of silencers with reflection over silencers
              with sound absorption in the absence of absorbing material,
              which becomes contaminated and deteriorates with time.
              Silencers in the form of broadened sections of a tube
              have less damping than silencers in the form of branches.
              Calculations are given, along with dimensions of appaartus
              and the results of the measurements of the damping for

Card 1/2

EAST GERMANY/ Optics - Geometrical Optics. K-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6930

whistles and various combined silencers. The damping
in narrow-band silencers reaches 50 -- 80 decibels,
in broadband ones it is approximately 40 decibels. --
D.Z. Lapashev

Card 2/2

EAST GERMANY/Optics - Geometrical Optics. K-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 6940

Author : Erler, W.

Inst : Technical College, Dresden, West Germany

Title : Apparatus for Calibration of Vibrations and Shock Meters

Orig Pub : Hochfrequenztechn. und Elektroakust., 1959, 68, No 1, 18-25

Abstract : Analytic expressions are derived for the sensitivity in
the calibration of vibration meters by the method of re-
ciprocity with the aid of electrodynamic and piezoelectric
converters. In the case of a double electrodynamic vibra-
tion table (L) the sensitivity of the calibrated converter
(CC) is calculated from the formula

Card 1/4

$$B_a = \sqrt{\frac{U_{31}U_{32}}{U_{21}i_2} \cdot \frac{m_s + m_g}{m_g} \cdot \frac{n_{is}}{\omega} \cdot \frac{a_0}{a}},$$

where U_{31} is the no-load voltage on the calibrated conver-
ter in excitation of an auxiliary radiator (AR, U_{21} is the
corresponding voltage on a reversible converter (RC), U_{32}
is the voltage on the CC in the excitation of the RC, i_2
is the current in the RC coil in excitation of the RC, m_g
the mass of the prermanent magnet, m_s the mass of the
moving system, a_0 the value of the relative frequency
characteristic in the linear portion, a the corresponding
value for frequencies approaching resonance of the system,
and ω is the angular frequency. The ratio a_0/a is a
correction for the non-uniformity of the frequency

Card 2/4

characteristic of the vibration stand. Analogous expres-
sions are obtained for the case of avibration stand (II)
with piezoelectric AR, intended for higher frequencies.
the frequency characteristic of the vibration table I has
a linear portion from 100 to 1500 -- 2000 cycles and ad-
mits of measurement with allowance for corrections in the
range 30 -- 3000 cycles. For vibration table II measure-
ments are permissible with allowance for correction from
500 to 8,000 cycles, but the setup requires a more sensi-
tive reaeiving channel with active filters. The broaden-
ing of the range to frequencies below 300 cycles has been
carried out with the aid of an optical reading of the am-
plitude. Use was made in the constructions of "maniperm"
magnets with diameter of 97 and 110 mm. The length of
the entire system in the vibration stand I is 161 mm, and
in vibration stand II it is 45 mm. The mandrels of the
coils are made of plexiglas. The winding is double layer,

Card 3/4

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6940

            80 turns of copper wire 0.25 mm in diameter. From the
            condition of the permissible errors, the mass of the
            moving system should be approximately five times greater
            than the mass of the CC. The error introduced by the
            inaccuracy in the determination of the mass is approxima-
            tely 0.6%. The frequency characteristic has been measured
            with an error of 2%. The average discrepancy in the cali-
            bration by the reciprocity method and in the optical
            reading is 2.2%. Sketches of the construction, block
            diagram, and electric diagrams of the apparatus, equiva-
            lent circuits, and also measurement results are all given.
            Bibliography, 9 titles.   -- D.Z. Lopashev

Card 4/4

Abs Jour   : Ref Zhur Fizka, No 3, 1960, 6948

Author   : Kurzeja Helena
Inst   : -
Title   : Procedure for Measuring the Level and the Spectrum of
               Industrial Noise by Means of 1/3 Octave Filters.

Orig Pub   : Pomiary, automat., kontrola, 1958, 4, No 11, 483-488

Abstract   : The use of filters with a bandwidth of 1/3 of an octave
               makes it possible to obtain a more accurate spectral
               characteristic of the noise, sufficient for the choice
               of effective sound absorber. If it is necessary to sup-
               press noise in the source itself, a highly selective
               spectrum analyzer must be used. The measurements descri-
               bed were caried out by means of a magnetic tape recorder
               and the recording was investigated by means of a spectro-
               meter and a high speed level recorder. The errors are
               calculated, introduced by the apparatus used;   the total

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6948

            magnitude of the errors does not exceed $\pm$ 4 db. The
            results of the measurements are represented in the form
            of tables and graphs.

Card 2/2

CZECHOSLOVAKIA/Optics - Optical Media.   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6954

Author   : Kucka Jozef
Inst   : -
Title   : Measurements of Noise in Certain Manufacturing Plants.

Orig Pub   : Bezpecn. a hyg. prace, 1959, 9, No 7, 209-212

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6956

Author   : Bajnoh Lajos
Inst   : -
Title   : Test of Metal-Cutting Machines for Noise

Orig Pub   : Sep, 1959, 11, No 7, 253-258

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6962

Author   : Kor, S.K.

Inst   : The University, Allahabad, India

Title   : An Ultrasonic Method for Measuring the Mass-Action
              Equilibrium Constant of Electrolytes.

Orig Pub   : Z. phys. Chem. (DDR), 1959, 210, No 5-6, 288-292

Abstract   : An optical method of light diffraction by ultrasound at
              t 20° was used to measure the absorption of ultrasound
              in aqueous solution of $MnSo_4$ in the frequency range from
              1 to 6 Mcs for molar concentrations of electrolyte from
              0.0025 to 1.0. Calculation of the excess absorption coef-
              ficient at a wave length a' λ gives a relaxation frequency
              of approximately 3 Mcs. This frequency increases with in-
              creasing molar concentration from 0.0025 to 0.02.

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6962

The sharp increase in the absorption of ultrasound in a
solution of $MnSO_4$ in connection with the dissociation
process. To calculate the degree of dissociation, use
is made of the relation f^* $f^*_0\sqrt{1 + \frac{1-n}{n} \times (2 - F.c.n)}$
where f^* is the relaxation frequency
for the molar concentration c, f^*_0 is the relaxation
frequency for $c = 0$, n is the degree of dissociation, and
F is the function of ion concentration and is constant.
The equilibrium constant K is calculated from the formula
$K = c.b_{\pm}^2 .n/(1 - n)$, where $b_{\pm}^2$ is the mean squared coeffi-
cient of activity, determined from the Debye-Huckel theo-
ry. The value of the constant, $K = 40 \times 10^{-4}$, determined
from acoustic measurements, is in good agreement with the
result $K = 50 \times 10^{-4}$, obtained when using the conductivity
method,
Bibliography, 7 titles. -- Yu.S. Trelin

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 6989

Author   : Ionescu Zane N.
Inst   : -
Title   : Production Control of Parts of Complicated Form with the
              Aid of Ultrasound

Orig Pub   : Rev. cailor ferate. 1959, 7, No 4, 290-203

Abstract   : No abstract.

Card 1/1

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 6990

Author   :   Gavrila, I.
Inst   :   -
Title   :   Ultrasounds in Solid Bodies. Rumanian Ultrasonic Flaw
                Detector

Orig Pub   :   Gaz. mat. si fiz., 1959, B10, No 5, 274-278

Abstract   :   No abstract.

Card 1/1

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 7055

Author   :   Nabelih Bohumil

Inst   :   Optics Laboratory, Czechoslovak Academy of Sciences,
                Prague, Czechoslovakia

Title   :   Correction of Optical Systems with the Aid of Differential
                Transfer Coefficients.

Orig Pub   :   Jemna mech. a opt., 1959, 4, No 4, 128-129

Abstract   :   A method is proposed for correcting optical systems, in-
                troduced by M'Auley and Cruikshank (M'Auley A.L., Cruikshank
                F.D. Proceedings of the Physical Society, 1945, 57, 302).
                Tables are given which make it possible to compare the
                reliability of the calculation with the trigonometric
                method.

Card 1/1

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7058

Author   : -
Inst   : -
Title   : Rare Earth Optical Glasses. Second Laboratory of the
           Institute of Optics. Precision Machinery, and Instruments.

Orig Pub : Kesyue tunbao, Kekhue tongbao, Nauchn. vestn. Scientia,
           1959, No 8, 274-275

Abstract : No abstract.

Card 1/1

CZECHOSLOVAKIA/Optics. K

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7059

Author   : Prokopova, H., Vasko, A.
Inst   : -
Title   : Transmission of Arsenic Glass in the Range from 15 to 25
           Microns.

Orig Pub : Ceskosl. casop. fys., 1959, 9, No 1, 111-112

Abstract : See Referat Zhur Fizika 1960, No 1, 1972.

Card 1/1

CZECHOSLOVAKIA/Optics.- K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7062

Author   : Minar, S.
Inst   : -
Title   : Effect of Tropical Climate on Optical Instruments.

Orig Pub   : Jemna mech. a opt., 1959, 4, No 7, 235-237

Abstract   : The problem of tropicalization of instruments is raised,
               and the principal factors that influence the behavior of
               optical instruments under tropical conditions are suma-
               rized and considered. The effects of fungi and the method
               of fungus proofing is described in greater detail. Cer-
               tain data on the corrosion of mechanical portions of the
               instrument are summarized.

Card 1/1

EAST GERMANY/Optics - K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7073

Author   : Bergner, J.
Inst   : -
Title   : Optical Equipment for Microscopes

Orig Pub   : VEB Carl Zeiss Jena Nachr., 1959, 8, No 3-6, 235-248

Abstract   : Popular Article.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7074

Author   : Beyer Hermann
Inst   : -
Title   : Microscope for the Measurement of Tracks of High Energy
               Particles in Photoemulsions.

Orig Pub   : VEB Carl zeiss Jena Nachr., 1959, 8, No 3-6, 131-134

Abstract   : The nuclear microscope is described. Its constructive
               features are noted (interference adopter for the control
               of linearity of the movement of the table and of the ob-
               jective, thermal insulation, sound recording of the measu-
               rement results, without necessitating that the observer
               move over from the microscope, etc.).

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7080

Author   : Kral Milan
Inst   : -
Title   : Instrument for the Control of Phase Differences of Phase
               Rings of Microobjectives

Orig Pub   : Jemna mech. a apt., 1959, 4, No 3, 80-83

Abstract   : Description and analysis of the interference method of
               A.N. Zakhar'yevskiy and A.F. Kuznetsova of an exact method
               of measuring phase differences, introduced by the phase
               rings, used for phase-contrast microscopy. The installa-
               tion developed at the Institute of Precision Mechanics and
               Optics in Prague is described.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7081

Author   : Gause Hans
Inst   : -
Title   : Use of Polarization Microscope

Orig Pub   : VEB Carl Zeiss Jena Nachr., 1959, 8, No 3-6, 134-181

Abstract   : Detailed survey article on modern polarization microscope,
              their arrangement, operating principle, different types,
              additional, parts, and fields of application.
              Bibliography, 36 titles.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7084

Author   : Bergner Joachim
Inst   : -
Title   : Application of a Photoadapter for Microphotography in
              Polarized Light

Orig Pub   : Jenear Rundschau, 1959, 4, No 2, 62-65

Abstract   : Description of the features of photography with the aid of
              microphotoadapters, provided with a viewer for simultaneous
              observation of the compound. Separating prisms, contained
              in such adapters, polarize tha light additionally and there-
              by distort the initial form of the image, obtained in the
              polarization microscope. Optimum conditions of photography
              are indicated and many colored microphotographs are repro-
              duced. -- A.N. Zakhar'yevskiy

Card 1/1

K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7087

Author   : Picmanova Eva
Inst   : -
Title   : Projection with the Aid of Cold Mirrors

Orig Pub   : Jemna mech. a opt., 1959, 4, No 2, 60-61

Abstract   : Description of the arrangement of so-called cold mirrors,
               which reflect only the visible portion of the radiation,
               their advantages, and also sources of light that can be
               used with cold mirrors.

Card 1/1

K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7090

Author   : Meier, B.
Inst   : -
Title   : New Interference Microscope for Control and Research by
               the Method of Multiple-Ray Interference

Orig Pub   : Feingeratetechnik, 1959, 8, No 6, 268-269

Abstract   : The author describes a microscope made by VEB Carl Zeiss
               (Jena) for the control of the purity of surface finish
               of metallic parts, based on the principle of multiple-ray
               interference. The objectives are 10 and 20 x, magnifica-
               tions from 70 1 to 340 x. The instrument was mounted on
               a base with a heavy specially-shaped column, on which is
               displaced a bracket, carrying the tube of the microscope
               and the mechanism of coarse and fine focusing. The illumi-
               nation is monochromatic from a thallium lamp. The slip-on
               (reference) flat plates have reflecting coatings of high

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7090

strength (quartz) with a reflection coefficient up to 95%.
However, in the tests of metallic parts the optimum coef-
ficient of reflection is 50%. The reference plates can be
inclined about both axes, so that fringes of any desired
width and orientation can be obtained. The instrument has
a camera for 6 x 9 cm plates. -- A.N. Zakhar'yevskiy

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7102

Author   : Lehmann, R.
Inst   : -
Title   : Investigation of a Justifying Device and Its Application
               for Optical and Astronomical Instruments.

Orig Pub   : Monatsschr. Feinmech. und Optik, 1959, 76, No 2, 51-52

Abstract   : The author considers a justifying device for the control
               of the direction of the axis of the finder tube from the
               point of view of general requirements imposed on such
               devices. The magnitude of motion, required accuracy,
               sequence, and method of setting, reliability of fixation
               of the completed installations, possibility of reading
               the amount of displacement.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7103

Author   : Schumann Hilmar

Inst   : Technical College, Dresden, East Germany

Title   : Simple Determination of the Numerical Aperture of Dry
              Microobjectives of Any Magnification

Orig Pub   : VEB Carl Zeiss Jena Nachr., 1959, 8, No 3-6, 268-271

Abstract   : The author describes a device which he perfected for the
              measurement of the numerical aperture of dry microobjecti-
              ves, and gives recommendations on its use in different
              cases. The accuracy of measurement of the magnitude of the
              aperture reaches 0.03.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7104

Author   : Landwehr, R.
Inst   : -
Title   : Microinterference as a Means of Testing the Shape of
              Aspherical Surfaces

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 154-166

Abstract   : The method proposed for testing the shape of strongly
              curves aspherical surfaces of rotation consists of ob-
              serving and measuring a system of interference gringes,
              formed between the tested aspherical surface and a flat
              or spherical comparison surface. The latter should be
              perpendicular to the microscope axis. The table of the
              microscope should be inclinded by measurable angles, so
              it becomes possible to measure the angles between the
              normal to the point of observation in the axis of ratation
              of the surface. In addition, the table should have two

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7104

            mutually-perpendicular measurable displacements.
            Equations are derives for the interference fringes
            about the points of tangency of the plane and spherical
            comparison surfaces with convex paraboloids; the author
            shows how to determine the parameter of the latter from
            the measurement semi-axes of the elliptical interference
            fringes. Methods of control of the results of measure-
            ment of the form of the surface are indicated.
            An example of testing parabolic surfaces with a parameter
            of 40 mm is given.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7112

Author   : Karolus, A., Fries, D.
Inst   : -
Title   : New Device for Determining the Velocity of Sound

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 269-282

Abstract   : Description of apparatus for the determination of the
            velosity of sound c, consisting of an ultrasonic modula-
            tor (modulation frequency 16 Mcs), in which tow quartz
            plates produce two spatially-separated ultrasonic waves,
            running opposite to each other. The radiation receiver
            is an RCA No. 7326 photomultiplier. The light ray is
            split by means of a semi-transparent mirror into two
            beams -- measured and compared. By means of a special
            circuit, the phase difference of the photocurrents pro-
            duced in the photomultiplier under the influence of both
            beams is measured. The errors that arise in the measurement

Card 1/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 7112

of the phase difference, due to inaccurate setting of
the quartz plates in the modulator and due to variation
in the illumination conditions of the photomultiplier
cathode by both rays, are investigated. By careful ad-
justment it was possible to obtain such a phase-differen-
ce, that the accuracy of measurement c could be raised
to 1.5×10^{-5} at a base of 18 meters, corresponding to
an error of 3 km/second. It is noted that the ultrasonic
modulator insures approximately 250 times greater accuracy
in the measurement of phase differences, than the Kerr cell.
The author believes that the accuracy indicated by Berg-
strand (see Handbuch der Physik, Vol. XXIV, Springer,
1956, p 31) in the determination of c, namely 0.3 km/se-
cond, is too high. -- K.S. Vul'fson

Card 2/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 7115

Author   :   Vasko Antonin
Inst   :   -
Title   :   Simplification of Formulas for the Calculation of Optical
                Constants of Absorbing Substances.

Orig Pub   :   Ceskosl. casop. fys., 1959, 9, No 1, 110-111

Abstract   :   See Referat Zhur Fizika 1959, No 11, 26024.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7117

Author   : Langer, V., Koluch, J.
Inst   : -
Title   : Optical Pyrometer with Infrared Image Converter

Orig Pub   : Jemna mech. a opt., 1959, 4, No 7, 220-225

Abstract   : The authors indicate the possibility of using an infrared
image converter for visual pyrometry at comparatively low
temperatures. The described infrared pyrometer operates
on the principle of a filament pyrometer with a lower limit
of temperature indication of 350° C. In the theoretical
part is given the basis for calculating the operating ran-
ge of the pyrometer, including calculation of the measure-
ment errors, resulting from the properties of the image
converter employed.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7119

Author   : Anacker, F., Mannkopff, R.

Inst   : Mineral Institute, The University, Gottingen, West
                  Germany

Title   : Emitting Ability of Carbon at Sublimation Temperature

Orig Pub   : Z. Phys., 1959, 155, No 1, 16-22

Abstract   : The emitting ability of carbon at sublimation temperature
is determined by comparing the radiation of the surface
of the anode crater of an arc with black-body radiation
of the same temperature (at $\lambda \backsim$ 400, 482 and 640 millimi-
crons). The comparison was made by photographic registra-
tion and subsequent photometry. Optimum conditions of
operation of the arc and the requirements that must be
satisfied by the carbon material are considered.

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7119

On the basis of the data obtained, it is concluded that
it is not advantageous to use the arc as a standard
radiator. -- T.I. Nikitinskaya

Card 2/2

YUGOSLAVIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7126

Author   : Herak, M.J., Kratohvil, J., Herak, M.M., Wrischer, M.

Inst   : The University, Zagreb, Yogoslavia

Title   : A Light Scattering and Electron Microscope Examination
              of Monodispersed Metal Iodate Hydrosols

Orig Pub   : Croat. chem. acta, 1958, (1959), 30, No 4, 221-230

Abstract   : A simple procedure was used to obtain monodispersed
              hydrosols of lead iodate and lanthanum iodate. In ob-
              serving the scattering of light by hydrosols, bright
              colored fringes are seen (the Tyndall spectrum of high
              order) indicating high monodispersness of the system and
              spherical shape of the particles. The lead iodate is
              unstable, and this phenomenon can be observed in it after
              mixing the solution only for 10 - 15 minutes. For longer

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7126

measurements, the lead iodate was stabilized by filtra-
tion. Using a corresponding photometer, the angular dis-
tribution of the scattered radiation was measured. This
distribution is characterized by the existence of sharp
maxima at definite angles of observation. The dimensions
of the scattering particles were estimated by a method
described by Lamer and Johnson and also from the results
of measurements made by an ordinary and an electron mi-
croscope. The average radius of the particles in the
lanthanum iodate is $700\,\mu$, and in the lead iodate it is
$800\,\mu$. The question of the mechanism of production of
monodispersed hydrozol of metal iodate and concerning the
shape of the particles is discussed.
Bibliography, 19 titles. -- N.A. Voyshvillo

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7132

Author   : Schill Frantisek
Inst   : -
Title   : Measurement of Stresses in Glass by the Method of
               Senarmon With the Aid of a Polarization Microscope.

Orig Pub   : Sklar a keramik, 1959, 9, No 3, 67-72

Abstract   : The theory of the Senarmon compensator, used for the
               analysis of electrically polarized light and consisting
               of 1/4-wave plates and an analyzer, is described in detail.
               The Senarmon method was realized with the aid of a Leitz
               polarization microscope and used to measure double refrac-
               tion in glass.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7137

Author   : Suffczynski, M.

Inst   : Imperial College, London, Great Britain

Title   : A Model for Investigation of the Optical Properties of
               Noble Metals

Orig Pub   : Bull. Acad. polon. sci. Ser. sci. math. astron. et phys.,
               1959, 7, No 3, 169-173, XIII

Abstract   : In the approximation of nearly-free electrons, the
               theories developed for the optical properties of noble
               metals. The two-band method is considered. The energy
               surfaces of these bands are taken in the form

$$E_{\pm}(K_x, K_y, K_z) = \frac{\hbar^2}{2m}\left[k_x^2 + k_y^2 + (K_0 - K_z)^2 + k_0^2 + 2k_0\sqrt{(K_0 - K_z)^2 + V^2}\right].$$

Card 1/4

Abs Jour   : Ref Zhur Fizika, No 3, 1960,

               Here k_x, k_y, and k_z are the components of the wave vector.
               The z axis is directed along a line joining the center Γ
               of the Brillouin zone with the center L of its hexagonal
               face, k_0 is the distance Γ L in reciprocal space, and V
               is proportional to the energy of the gap at the point L.
               The surface in reciprocal space, covering the field states,
               is taken from $E_- = E_F$, where E_F is the Fermi level. The
               matrix elements of the momentum operator are assumed to be
               constant. The dielectric constant and the coefficient of
               absorption obtained as a result of the calculation added to

Card 2/4

the corresponding Drude coefficient, and the damping
coefficient k(λ) was calculated. The calculated values
are finite, if the Fermi surface lies inside the Brillouin
zone, and have singularities if the Fermi surface makes
contract with the boundary of the Brillouin zone. These
singularities can be eliminated by assuming that the effec-
tive masses in the lower and upper zones are not exactly
equal to each other. In accordance with the experiment,
the curve k(λ)/λ as a function of λ has a minimum.
In order for this minimum to lie at the same wavelength as
in the experiment, one must assume that V is small.
The energy of the photons corresponding to the minimum
is exactly equal to the energy gap at the point L, when
the Fermi surface touches the boundary of the Brillouin
zone, and is greater than this gap if the former lies
entirely inside the latter. With this, only vertical
optical transitions are considered. The width of the

Card 3/4

minimum on the dispersion curve is determined by the ratio
of the width of the forbidden zone to the energy of the
free electron at the point L of the Brillouin zone, and is
greater, the smaller this ratio. The minimum on the dis-
persion curve is connected with the increase in the densi-
ty of the states with decreasing distance to the boundary
of the Brillouin zone.
Bibliography, 18 titles. -- E.L. Nagayev

Card 4/4

CZECHOSLOVAKIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7138

Author   : Knittl Zdenek
Inst   : -
Title   : On the Energy Balance of the Optics of Metals

Orig Pub   : Ceskosl. casop. fys., 1959, 9, No 1, 4-15

Abstract   : No abstract.

Card 1/1

ROUMANIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7142

Author   : Parausanu, V.
Inst   : -
Title   : Quantum Yield in a Photochemical Process

Orig Pub   : An. Prom. -Ser. Ser. chim., 1958, 13, No 4, 47-65

Abstract   : Survey article. The principal roles of photo-chemistry,
              quantum yield, and its experimental determination are
              considered.
              Bibliography, 15 titles.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7143

Author   : Haremann, R., Pietsch, H.

Inst   : Humboldt University, Berlin, East Germany

Title   : Photochemical Reduction of Thionin. Part 3. Effect of
               Fluorides on the Photochemical Sensitivity of Complexes
               of thionin, selenin, 2,7-diaminoohenoxazine, and Methylene
               Blue with Divalent Ions of Iron

Orig Pub   : Z. phys. chem. (DDR), 1959, 210, No 5-6, 232-245

Abstract   : From among the dyes selenin (e,7-diaminophenselenazine),
               thionin, 2,7-diaminophenoxazine, and methylene blue,
               thionin discolors most rapidly of all photochemically in
               the presence of Fe^{2+}. No direct connection is observed
               between the difference in reduction-oxidation potentials
               (of the system dye plus Fe^{3+}) and the photochemical

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7143

               sensitivity. The speed of the dark reaction, to the con-
               trary, increases with increasing difference of the reduc-
               tion-oxidation potentials. The addition of fluorides leads
               to slowing down of the dark reaction. Acetone partially
               removes the effect of the fluorides.
               For Part 2. see Ref Zhurnal Khimiya, 1958, No 23, 76760.

Card 2/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7144

Author   : Haremann, R., Reimer, K.G.

Inst   : Humboldt University, Berlin, East Germany

Title   : Photochemical Reduction of Thionin. Part 4. Kinetics
             of Dark Reaction, Occurring in Photochemical Reduction
             of Thionin by Divalent Ions of Iron.

Orig Pub : Z. phys. Chem. (DDR), 1959, 211, No 1-2, 26-39

Abstract : The oxidation of leucothionin by Fe^{3+}, which is constant-
             ly superimposed on the photochemical reduction of thionin
             by Fe^{2+} as a reverse dark reaction, proceeds independently
             of the concentration of the Fe^{3+} as a first-order reaction,
             which is retained also in equimolecular concentrations of
             the reaction partners. The speed of reaction depends
             strongly on the concentration of Fe^{3+}. The kinetic

Card 1/2

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7144

             measurements have shown that the dark reaction takes place
             with a complex of leucothionin and Fe^{3+} as an intermediate
             step.
             For Part 3 see abstract 7143.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7145

Author   : Haremann, R., Reimer, K.G.

Inst   : Humboldt University, Berlin, East Germany

Title   : Photochemical Reduction of Thionin. Part 5. Kinetic
               Proofs of the Existence of a Thionin Complex with Divalent
               Ion and Iron

Orig Pub   : Z. phys. Chem. (DDR), 1959, 211, No 1-2, 63-73

Abstract   : The photochemical reduction of thionin by Fe^{2+} presupposes
               a preliminary formation of photochemical-active complex
               of thionin and Fe^{2+}. The speed of reaction is determined
               by the concentration of the ions of the complex. The dis-
               sociation constant of the complex is determined from the
               dependence of the reaction rate on the concentration of
               Fe^{2+} . The use of solutions of Fe^{2+} salts, which are

Card 1/2

completely free of Fe^{3+} , has made it possible to obtain
    well-reproducible kinetic measurements. --
For Part 4 see abstract 7144.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7149

Author   : Braunbek Nerner

Inst   : University of Tubingen, West Germany

Title   : Concerning the Diffraction from an Aperture in a Non-
              Planar Screen

Orig Pub   : Z. Phys., 1959, 156, No 1, 66-77

Abstract   : Using a previously published approximate method (Z. phys.
              1950, 127, 381, 405), the author considers diffraction
              from an aperture in a non-planar screen. For the parti-
              cular case of a round aperture in a funnel-like screen,
              the diffraction field is calculated on the axis, behind
              the screen, in the case of a plane scallar incident wave,
              and for an incident plane electromagnetic wave, propaga-
              ting in the direction of the axis.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7169

Author   : Chen'I-syun', Syui Syui-yun,
Inst   : -
Title   : On the Analysis of Curves of Thermal Glow with Allowance
              for the Relative Probabilities of Repeated Localization
              of the Electrons.

Orig Pub   : Uli syuebao, Acta phys. sinica, 1959, 15, No 7, 393-396

Abstract   : It is shown that taking into account the relative proba-
              bility of repeated localization, it is possible to deter-
              mine, by analysis of the curves of thermal glow, simulta-
              neously the depth of the fusion levels and the ratio of
              the probabilities of recombination and localization of the
              electrons.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7170

Author   : Nilke, K.-Th.

Inst   : German Academy of Sciences, Institutes for Radiation
               Sources, Berlin, East Germany

Title   : Aluminum-Lithium Arsenate, Another Phosphor of the
               Arsenate Series.

Orig Pub   : Z. phys. Chem. (DDR), 1959, 210, No 5-6, 260-266

Abstract   : The author describes the preparation and luminescent
               properties of aluminum-lithium arsenate, activated with
               manganese. This phosphor, having high radiation bright-
               ness (up to 20% of the brightness of Mg-Li arsenate) has
               a composition $6Al_2O_3.6Li_2O.As_2O_5(10^{-2}Mn)$ (I). It is
               well excited with light with a wavelength of 365 mμ.
               The emission spectrum of the phosphor includes bands

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7170

               with maxima at 639, 645, 654, and 666 mμ, ascribed to
               ions of Mn^{4+} . It is noted that the components of the
               phosphor form a chemical compound, and this is confirmed
               by x-ray structural analysis. The increase in the time
               and the increase in the roasting temperature of the phos-
               phor reduce the intensity of the glow due to the volatili-
               zation of the arsenic. It is established that only a por-
               tion of the manganese is in the 4-valent state. The
               intensity of glow diminishes rapidly, starting with 200°C.
               It is noted that the similarity of the emission spectra
               of magnesium arsenate, magnesium-lithium arsenate, and
               aluminum-lithium arsenate in the presence of multivalent
               magnesium in these phosphors indicates a similarity of
               the structures surrounding the manganese in these subs-
               tances. -- Yu. Leonov

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7172

Author   : Riekl, N., Ortmann, H.
Inst   : -
Title   : On the Structure of Glow Centers in Activated Zinc-
              Sulphide Phosphors

Orig Pub   : Ann. Phys. (DDR), 1959, 4, No 1-5, 3-14

Abstract   : A ZnS-Cu phosphor with blue glow (BG) glows when calcined
              into a phosphor with green glow (GG). Investigation was
              made of the dependence of the ratio of intensities
              $V = I_g/I_b$ on the temperature of the preliminary calcina-
              tion. The measurements were carried out with two phos-
              phors, which have green glow at room temperature: $ZnS\text{-}10^{-4}\%$
              Cu by weight with an admixture of NH_4Cl (I), and the same
              phosphor without the NH_4Cl (II). It was established that
              the transformation of the phosphor with BG into a phosphor
              with GG occurs Already at roasting temperature on the

Card 1/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7172

              order of 200° C, and further increase in the roasting
              temperature of phosphor I, causes V to increase monoto-
              nically, while in the case of II it goes through a maxi-
              mum near 360° C. Not all the BG centers are converted
              into GG centers, and to each roasting temperature above
              200° C there corresponds an equilibrium value of V, to
              which the transformation tends upon prolonged roasting.
              If the phosphor is rapidly cooled to room temperature,
              this equilibrium freezes. At room temperature there
              occurs a slow inverse transformation of the GG centers
              into BG centers. Under the assumption that the transfor-
              mation BG $\rightarrow$ GG obeys the monomolecular law, an estimate
              is made of the reaction energy, $F = 0.38$ ev. An estimate
              of the activation energy of the reverse process, GG $\rightarrow$ BG
              yields $q \lesssim 0.67$ ev. In the phosphor ZmS-Cu with BG, one
              observes upon heating to 100--200° C not only an increase
              in the ratio V, but also an increase in the absolute value

Card 2/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7172

of the intensity of the green band. Upon sudden cooling
of the phosphor, this increase in GG is partially frozen
in. In ZnS-Ag phosphor and in phosphor without admixture,
which also have BG at room temperature, no production or
increase in the green band with increase in temperature
were observed. From the experimental data, above all from
the low values of the activation energy of the GG   BG
transformation, one can conclude that this transformation
is not connected with the penetration or removal of anions
from and to the lattice (S^{2-} or Cl^-). It may also be due
to the diffusion of cations Cu^+ or Zn^{2+} in the interstices
(and not Cu^{2+}, Zn^+, or Zn, since they gave paramagnetic
structures which actually were not observed (Ref Zhur Fiz.
1957, No 1, 2376)). In accordance with these considera-
tions, one proposes as the model of the BG center the Cu^+
ion in the interstice, along with Cu^+ in the cation site.
-- Kh.F. Kyaembre

Card 3/3

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7176

Author   : Wilke, K.-Th.

Inst   : Physical Technical Institute, German Academy of Sciences,
              Berlin, East Germany

Title   : Preparation of Pure BaS Luminophors from Barium Trithiocar-
              bonate.

Orig Pub   : Monatsber Dtsch. Akad. Wiss. Berlin, 1959, 1, No 3, 177-
              180

Abstract   : The proposed and investigated method of preparing BaS
              from $BaCS_3$ (by heating in a N_2 atmosphere at 700° C)
              makes it possible to obtain a relatively pure material
              for luminophors.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7179

Author   : Antonov-Romanonskiy, V.V.

Inst   : The Institute of Physics, Academy of Sciences, USSR

Title   : On the Electroluminescence of Powdered Zinc Sulphide
              Layers.

Orig Pub   : Chekhosl. fiz. zh., 1959, 9, No 2, 146-160

Abstract   : The author compares and interprets the results of many
              experimental works of the Institute of Physics imeni P.N.
              Lebedev, Academy of Sciences USSR, on problems of elec-
              troluminescence. Some of the papers have been previously
              published. 1. In measurements of electroluminescence
              layers of ZnS-Cu of thickness equal to one small crystal
              ($\sim 5\mu$), a region is reached with increase in voltage,
              in which the usual dependence of the brightness B on the

Card 1/4

Abs Jour   : Ref ZHur Fizika, No 3, 1960, 7179

              voltage $B = A \exp(-b/\sqrt{U})$ is replaced by a dependence
              of the form B $A' \exp(-b'/U)$. In this case the thickness
              of the barrier region becomes comparable with the thick-
              ness of the small crystals and a further increase in the
              voltage has led to a linear increase in the average field
              strength. The result agrees with the idea that usually
              in small electroluminescent crystals the ionization by
              electron impact takes place in a small region of the
              strong field, and in the remaining portion this process
              does not take place. 2. Upon comparison of the spectra
              of electroluminescence and photoluminescence of electro-
              luminophors with two or three activators, of which one
              is a rare-earth element, it has been established that
              the relative intensity of the lines Nd and of other rare
              earths is the same in electroluminescence as in photo-
              luminescence, and this gives grounds for the conclusion
              that the glow centers are the same in photo and

Card 2/4

CZECHOSLOVAKIA/Optics -
K-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7179

electroluminescence. A comparison of the darkness of
electroluminescence and the afterglow of photoluminescen-
ce, in which the kinetics are the same, has shown that
7% of the volume glowed in electroluminescence .
3. The sharper drop of the relaxation curve of electro-
luminescence in its initial portion compared with the
curve for photoluminescence is offered as evidence that
in regions with more intense field there is a greater
concentration of glow centers.
4. In the excitation of phosphors with trapezoidal
pulses, the dc component of the glow started burning
slower than the alternating component. The infrared
radiation acts strongly on the dc component. It is
known that the effect of infrared and red light becomes
stronger the smaller the concentration of the ionized
centers in the phosphor. Both fracts serve as grounds
for stating that the excitation is transfered from the

Card 3/4

CZECHOSLOVAKIA/Optics -
K-

Abs Jour : Ref Zhur Fizika, No 3, 1960, 7179

region of field concentration to the entire volume of
the crystal.
Bibliography, 18 titles. -- A.G. Gol'dman

Card 4/4

- 150 -

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7182

Author   : Patek Karel

Inst   : Physics Institute, Chechoslovak Academy of Sciences,
               Prague, Czechoslovakia

Title   : On the Photoelectroluminescence of ZnS-Cu

Orig Pub   : Ceskosl. casop. fys., 1958, 8, No 5, 628

Abstract   : The author has investigated the difference of ultraviolet
               on the brightness wave of electroluminescence of ZnS-Cu;
               an increase in brightness of the principla maximum is ob-
               served and a reduction in the amplitude of the secondary
               maximum, along with a certain change in the phase shift.
               It is proposed that under the influence of the ultraviolet
               radiation the number of conductivity electrons increases
               and these reduce the effect of polarization in the small

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7182

               ZnS crystals and increase the number of electrons accele-
               rated by the electric field. -- V. Kopetskiy

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7183

Author   : Patek Karel
Inst   : -
Title   : On the Photoelectroluminescence of ZnS-Cu

Orig Pub   : Chekhosl. fyz. zh., 1958, 8, No 5, 612-613

Abstract   : See abstract No 7182.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7184

Author   : Patek, K.

Inst   : Institute of Physics, Czechoslovak Academy of Sciences,
              Prague, Czechoslovakia

Title   : On the Photoelectroluminescence of ZnS-Cu

Orig Pub   : Chekhosl. fyz. zh., 1959, 9, No 2, 161-167

Abstract   : The effect of weak ultraviolet on electroluminescence of
              ZnS-Cu has been investigated. A more detailed description
              of the experiments, the results of which were reported
              earlier (abstract 7182), is given, A qualitative explana-
              tion of the phenomena is given on the basis of the assump-
              tion that the ultraviolet causes an increase in the num-
              ber of electrons in the conduction band and this increases
              the probability of excitation of the activators by the

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7184

            accelerated electrons. Further explanations, as indicated,
            are not the only ones possible. -- A.G. Gol'dman

Card 2/2

ROUMANIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7209

Author   : Agirbiceanu, I., Ghita, C., Topa, V.
Inst   : -
Title   : Effect of Argon on the Spectrum of I_2 Vapor

Orig Pub   : Rev. phys. Acad. RPR, 1958, 3, No 3-4, 195-202

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7262

Author   : Steger Eberhard
Inst   : -
Title   : Infrared Spectra of Substances in Small Amounts

Orig Pub   : Wiss. Z. Techn. Hochschule Dresden, 1958-1959, 8, No 1,
               214

Abstract   : Abbreviated text of a paper dealing with the possibilities
               of recording infrared spectra of small amounts of substan-
               ces without micro attachments or condenser systems.
               A spectrum of urea, obtained in the presenee of 10μ g of
               substance, pressed from 50μ g of KBr in a press 2 mm in
               diameter, is reproduced.   -- B. Kiselev

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7291

Author   : Kukurezyanu, I.
Inst   : -
Title   : Raman Spectra of Equimolecular Aqueous Solutions of
               Acetic Acid

Orig Pub   : Rev. phys. Acad. RPR, 1958, 3, No 3-4, 239-245

Abstract   : On the basis of an investigation of the character of the
               redistribution of intensity between components (1674,
               1712, and 1754 cm^{-1}) of the Raman lines of the $C = O$ bond
               in aqueous solutions of acetic acid, the author has esta-
               blished the forms of associations both between the mole-
               cules of the acid, and between the molecules of the acid
               and the water, on the basis of the hydrogen bonds. Con-
               clusions from spectroscopic data are confirmed by the
               character of the dependence of the density of the solution
               of the concentration. Bibliography, 8 titles.   -- V.M.
                                                                Pivovarov
Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7313

Author   : Bucka, H., Kopfermann, H., Otten, E.W.

Inst   : Physics Institute, The University, Heidelberg, West
               Germany

Title   : Determination of Nuclear Quadrupole Moments of Radioac-
               tive Isotopes Cs^{135} and Cs^{137}

Orig Pub   : Ann. Physik, 1959, 4, No 1-5, 39-49

Abstract   : The method of double resonance was used to investigate
               the high frequency transitions in the hyperfine structure
               of excited
                        $7^2P_{3/2}$ state in the first spectrum of Cs^{135}

               and Cs^{137}. From the Casimir formula and from the experi
               mentally obtained values of the constant of quadrupole

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7313

               interaction, the authors have determined the quadrupole

               moments Q of the nuclei Cs^{135} and Cs^{137}. Without the

               Sternheimer correction, Q (Cs^{135}) = $(+0.049 \pm 0.002)$ x

               10^{-24} cm^2 and Q (Cs^{137}) = (0.050 ± 0.02) x 10^{-24} cm^2.
               -- N.Yashin

Card 2/2

Abs Jour   : Ref Zhur Fizka, No 3, 1960, 7314

Author   : Fricke, G., Kopfermann, H., Penselin, S., Schlupmann, K.
Inst   : -
Title   : Determination of the Hyperfine Structure Splitting for
             the Ground State $^2D_{3/2}$ and $^2D_{5/2}$ of Scandium and the
             Quadrupole Moment of Sc^{45} Nucleus.

Orig Pub   : Z. Phys., 1959, 156, No 3, 416-424

Abstract   : Using a magnetic-resonance atomic-beam method, measurement
             was made of the splitting for the hyperfine structure of
             the lower electron level $^2D_{3/2}$ and $^2D_{5/2}$ of the stable
             isotope Sc^{45}. These disintegrations yielded the following
             values of the constants of the magnetic dipole and electric

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7314

quadrupole interaction (in megacylces): $a_{3/2} = 269.560 \pm$
0.02; $b_{3/2} = -26.37 \pm 0.1$; $a_{5/2} = 109.034 \pm 0.01$; $b_{5/2} =$
-37.31 $\pm$ 0.01. The values of the electric quadrupole
moment, calculated from $b_{3/2}$ and $b_{5/2}$, differ by 5%,
showing that the configuration $3d4s^2$ of the ground states
is perturbed by higher configurations. Averaging these
two values yields a quadrupole moment $Q(Sc^{45}) = -(0.22 \pm$
0.01) $\times 10^{-24}$ cm^2.
See Also Ref Zhur Fizika, 1959, No 12, 28493.

Card 2/2

CZECHOSLOVAKIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7316

Author   : Plzak
Inst   : -
Title   : On the Activity of the Society for Spectroanalysis
               Research

Orig Pub   : Hutn, listy, 1959, 14, No 1, 60

Abstract   : A brief contents is given of the papers delivered to the
               June 1958, meeting of the society.
               1) Rapid determination of niobium and silicon in 18-8
               steels; 2) possibility of employing spectroanalysis in
               the ceramic industry; 3) application of a spectrograph
               to the study in the changes of the chemical composition
               of surface layers of steel.

Card 1/1

ROUMANIA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7318

Author   : Kathrein, I.
Inst   : -
Title   : Spectral Analysis and the Prospects of Its Application
               in the Food Industry.

Orig Pub   : Ind. Aliment, Prod. veget., 1959, No 1, 3-8

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7325

Author   : Bardocz Arpad, Tabeling, W. Raymond
Inst   : -
Title   : Spectrochemical Analysis Using Time Resolution of the
              Spectra with the Aid of a Rotating Disk

Orig Pub   : Magyar kem. folyoirat, 1959, 65, No 3, 126-128

Abstract   : On working with spark spectra of a strong radiation that
              arises at the beginning instants of the spark discharge,
              which have a continuous spectrum, mask the weak spectral
              lines used for the analysis. This reduces the slope of
              the calibration curves and results in lesser sensitivity
              and accuracy of the analysis. The use of generators with
              electronic control makes it possible, by using a synchro-
              nously rotating disk with holes, to cut off the radiation
              of the initial period of glow of the spark and thereby
              get rid of the noise.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7330

Author   : Hsu Sheng-Meim Ho I-djen

Inst   : Institute of Metal Research, Academy Sinica, China

Title   : Estimate of the Slope of the Calibration Curve in
              Spectrochemical Analysis

Orig Pub   : Uli synebao, Acta phys. sinica, 1959, 15, No 4, 178-185

Abstract   : To establish the value of the relation between the slope
              of the calibration curve and the concentration of the
              element, investigations were performed with 13 spectral
              lines of double multiplicity, belonging to the spectra
              of coblat and nickel. The results of the investigation
              show that the slope of the calibration curves depends on
              the concentration and that for a definite region of con-
              centrations, the slope of the curves of the spectral lines

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7330

            of given multiplicity varies linearly with the natural
            logarithm of the intensity of the corresponding lines.

Card 2/2

EAST GERMANY/Optics -   K-

Abs Jour   : Ref Zhur Fizkka, No 3, 1960, 7345

Author   : Muller- Uri G.

Inst   : Central Institute for Casting Engineering, Leipzig,
              East Gemmany

Title   : Spectrochemical Determination of Magnesium in Cast Iron
              Using Solid Electrodes.

Orig Pub   : Exptl. Techn. Phys., 1959, 7, No 2, 59-66

Abstract   : Specimens for the analysis of cast in a metallic chill
              mold. The casting is a metallic rod with a bulky bulge
              on top and a neck for conveniently separating the latter.
              It was established experimentally that specimens of this
              kind are sufficiently homogeneous. The magnesium con-
              tents in the standards was determined by spectral analysis
              of the dissolved charges against synthetic standard

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7345

solutions. For the analysis of the metallic specimens,
use is made of the Q-24 spectroscope, with excitation
produced by a spark generator in accordance with the
Feissner scheme (C 0.012 L 0), copper interchangeable
electrode, preliminary sparking for 45 sec, photography
for 120 sec. The light flux incident on the slit of the
spectrograph is attenuated by a gray filter and a step
wedge. The analytical lines Mg 2796 -- Fe 2788 Å and Mg
2802 -- Fe 2788 Å are subjected to photometry at different
steps, depending on the magnesium contents. No effect of
the structure of the alloy (white or annealed cast iron)
has been observed. The mean squared error of the analysis
is 5--6 relative percent, the duration is $\sim$ 20 min.
-- A.B. Shayevich

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7348

Author   : Weiss Jan, Bieber Boleslav
Inst   : -
Title   : Determination of Small Amounts of Sodium in an Alloy of
              Aluminum and Silicon with the Aid of a Flame Photometer.

Orig Pub   : Hutn. listy, 1959, 14, No 3, 247-248

Abstract   : The principles of the method are described and the procedu-
              re for preparing the solutions. The plotting of the cali-
              bration curves was described. The question is considered
              of the influence of other elements on the accuracy of the
              determination. As a result of the experiments performed
              it has been established that the determination of the
              sodium is affected principlaly by the amount of aluminum.
              The accuracy of the determination is 0.002% sodium at a
              sodium contents in the specimen of several thousandths or
              several hundredths of a percent. -- V. Piffl

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7355

Author   : Ren Ta-Kang, Han Thang-yu, Yu Po, Chang Kung-soo,
              Wang Hung-chang

Inst   : Institute of Metal Research, Academy Sinica, China

Title   : Universal Method of Spectrochemical Analysis of
              Alloyed Steels.

Orig Pub   : Uli syuebao, Acta phys, sinica, 1959, 15, No 4, 173-177

Abstract   : The authors describe two universal methods of spectroche-
              mical analysis of alloys of steel, in which the prepara-
              tion is simplified and the effect of microstructure and
              physical state of the specimens is reduced. In the "dimso-
              lution method" the steel specimens are dissolved in acid
              and the solution is fed in drops unto the plane face of
              the carbon spark electrodes. In the "powder method"

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7355

              oxides prepared from the steel specimens are placed in a
              cavity inside the carbon electrodes and are excited in
              the arc. The methods, as shown by experiment, give satis-
              factory results.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7357

Author   : Biernat Zofia
Inst   : -
Title   : Spectrographic Determination of Traces of Elements in
               Rocks.

Orig Pub   : Chem. Analit., 1958, 3, No 5-6, 775

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7360

Author   : Witkowska Stanislawa
Inst   : -
Title   : Spectrographic Method of Quantitative Determination of
               Germanium in Zinc Ores and Metallurgical Semi-Finished
               Products.

Orig Pub   : Chem. andlit. (Polska), 1959, 4, No -12, 471-475

Abstract   : No abstract.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7386

Author   : Wagnerowski Tadeusz
Inst   : -
Title   : Measurement of Dispersion with the Aid of a Compensator

Orig Pub   : Pomiary, Automat., kontrola, 1959, 5, No 2, 70-71

Abstract   : Formulas are devived which make is possible to calculate
              the average dispersion of matter from the angular disper-
              sion $\Delta\beta'$ of the boundary of the bright and dark field
              in the determination of the index of refraction with a
              refractometer, by the method of the boundary ray. Possi-
              bility is indicated of measuring $\Delta\beta'$ with the aid of a
              compensator, consisting of two rotating direct-view
              prisms. The procedure of such measurements is described.
              Numerical examples are given. -- I.V. Peysakhson

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7393

Author   : -
Inst   : -
Title   : Report on the Construction of a Spectrosaope for Steel
              Analysis

Orig Pub   : Uli syuebao, Acta phys. sinica, 1959, 15, No 6, 277-281

Abstract   : The authors describe a spectroscope they constructed for
              visual analysis of steel and other alloys. The instru-
              ment is constructed on the auto-collimation principle
              with two prisms, an achromatic objective, and a Kellner
              eyepiece 25 x. The spectrum range is 3900--7000 Å. The
              reciprocal linear dispersion is 0.89 Å/mm at 4358 Å and
              2.91 Å/mm at 5893 Å. The resolution is 0.14 and 0.59 Å
              respectively. A detailed calculation of the optical
              system is given.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7404

Author   : -

Inst   : Fu-Dan University, China

Title   : Photoelectric Direct-Reading Apparatus for a Medium-
                Dispersion Quartz Spectrograph and Analysis of Copper in
                Aluminum Alloys.

Orig Pub   : Uli syuebao, Acta phys. sinica, 1959, 15, No 6, 318-324

Abstract   : An attachment is described for a spectrograph with two
                photomultipliers and corresponding receiving-detecting
                and reading devices. The measurement is by the capacitor-
                discharge method. To alanyze copper in aluminum alloys,
                the photo-multiplier is set at the Al 2660 $\overset{o}{A}$ (standard)
                and Cu 2247 $\overset{o}{A}$ lines. The range of measurem concentration
                is 2.3--6.7%. Optical and electrical schemes and

Card 1/2

                calibration curves are given.
                Bibliography, 12 titles.

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7418

Author   : Gross Bernhard
Inst   : -
Title   : Compton Effect Current

Orig Pub   : Z. Phys., 1959, 155, No 4, 479-487

Abstract   : It is shown theoretically and experimentally that the
               current arising in insulators because of the appearance
               of Compton electrons in the absorption of hard quanta is
               proportional to the radiation energy flux. Gamma radia-
               tion from Co^{60} (2270 curie) is used. An electrometer is
               used to measure the current (4×10^{-12} a/cm^2) arising
               when a plexiglass block measuring 12 x 12 x 2.5 cm is ir-
               radiated. -- I.G. Shveytser

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7423

Author   : Reiss Karl, H.
Inst   : -
Title   : Physical Limits of Possibility of Eliminating X-Ray
               Scattered Radiation with the Aid of Grid Diaphragms

Orig Pub   : Z. angew. Phys., 1959, 11, No 5, 184-188

Abstract   : The author considers theoretically the connection between
               the parameters of the grid diaphragm and the ratio of the
               transmission of the grid to primary and secondary x-rays
               (selectivity of the grid). The optimum parameters of
               the grid are found (for each region of the voltages em-
               ployed), which ensure the highest selectivity. Experimen-
               tal values of the latter actually do not exceed these cal-
               culated theoretically. -- I.Ya. Nikiforov

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7425

Author   : Kakuschadse, T.I.
Inst   : -
Title   : The Satellites $K\alpha_3$ and $K\beta'$ of X-Ray Spectral Line

Orig Pub   : Ann. Phys. (DDR), 1959, 3, No 7-8, 352-359

Abstract   : It is proposed that in a transition metal, owing to the
              interaction between the external electrons and the thermal
              vibrations of the lattice, direct and inverse electron
              transitions occur between the 3d and 4s levels both within
              the confines of the shell of one ion, and between neigh-
              boring ions. The transitions of the former kind, 4s $\to$ 3d,
              occurring during the instant of emission of a $K\alpha_1$ photon,
              cause the appearance of a short-wave $K\alpha_3$ satellite, and
              transitions of the second kind (cross over) 3d $\to$ 4s,
              cause the appearance of the long-wave $K\beta'$ satellite.
              Calculation of the dependence of the density of the

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7425

              electron states on the temperature has shown that the
              intensity of the $K\beta'$ satellite should increase with in-
              creasing specimen temperature. The asymmetry of the $K\alpha_1$
              and $K\alpha_2$ lines is explained by the superposition of cer-
              tain satellites on these lines. -- I.Ya. Nikiforov

Card 2/2

Abs Jour   : Ref Zhur Fizka, No 3, 1960, 7439

Author   : Faessler, A., Kramer, H.

Inst   : The University, Munich, West Germany

Title   : On the Existence of Silicon Oxides SiO_2, SiO, and Si_2O_3

Orig Pub   : Ann. Physik (DDR), 1959, 4, No 1-5, 263-268

Abstract   : Using a vacuum x-ray spectrograph with a quartz crystal
              bent in a radius of 1 m, the doublet $K\alpha_{1,2}$ of silicon
              was investigated by the secondary method as a function
              of the degree of oxidation of the latter. Primary x-rays
              from platinum, excited at 20 kv and 40 ma, was used. The
              specimens (secondary radiators) were prepared by sputter-
              ing silicon oxides on a copper or platinum plate. To
              prepare a specimen of pure silicon, a single crystal of
              silicon was used purified by the method of zone melting

Card 1/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7439

              (up to 10^{-6} atomic percent of impurity). The exposure
              time amounted to 3 hours. The positions of the $Si-K\alpha_{1,2}$
              lines was determined with respect to the $Co-K\alpha_1$ line.
              A shift is observed of the $Si-K\alpha_{1,2}$ doublet towards the
              short-wave side with increasing degree of oxidation. Its
              values are 0.44 ev, 0.55 ev, and 0.60 ev for Si_2O, Si_2O_3,
              and SiO_2 respectively. A comparison of the spectrograms
              (10 x) of commercial SiO in a 1 : 1 mixture of Si with
              SiO_2 has shown that SiO is a mixture of Si with different
              oxides, and not, as previously assumed, a 1 : 1 mixture
              of Si and SiO_2. -- I.Ya. Nikiforov

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7478

Author   : Gergely Gyorgy, Adam Janos
Inst   : -
Title   : Equal-Brightness Standards Source Light, with Lambert-Law
              Radiation.

Orig Pub   : Magyar fiz. folyoirat, 1958, No 6, 573-576

Abstract   : An equal-brightness laboratory source of light, radiating
              in accordance with a low close to the Lambert law, is pro-
              vided by an aperture in a photometric sphere, covered with
              ground glass. Inside the sphere is placed an incandescent
              100 watt lamp with a color temperature of 2500--2600° K.
              The unevenness of brightness over the surface of the ground
              glass does not exceed 2%, the deviation from the Lambert
              law in the horizontal cross section of the aperture does
              not exceed 11.5%, and in the vertical cross section it
              does not exceed 16%. Using a bolometer and a spectro-

Card 1/2

            radiometer, the relative distribution of the spectral
            density of radiation of the source and its energy lumi-
            nosity measured, from which the energy and visual bright-
            nesses are calculated. Measurements are make for a series
            of light filters placed in front of the output opening of
            the sphere. The results of the measurements and calcula-
            tions are given in a table.

Card 2/2

CHINA/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7484

Author   : Khu Khe-chzhun
Inst   : -
Title   : Hydrogen Discharge Tube as a Source of Continuous
              Radiation of Ultraviolet Rays.

Orig Pub   : Sibei dasyue syuebao)tsz"zhan' kesyue), Khibei Daxue
              xuebao. Ziran kexue, 1958, (1959), No 3, 27-28

Abstract   : No abstract.

Card 1/1

EAST GERMANY/Optics -   K-

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7488

Author   : Friel Hans-Immo, Weise Horts
Inst   : -
Title   : Electronoptical Inverter--Photoelectric Instrument for
              Producing Images of Object in Ultraviolet and Infrared
              Portions of the Spectrum and to Amplify Images.

Orig Pub   : Janeer Recndschau, 1959, 4, No 3, 93-97

Abstract   : Popular article, containing the description of the elec-
              tronoptical converters produced by the firm VEB Carl
              Zeiss (Jena, East Germany) and their applications.

Card 1/1

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 7509

Author   :   Eggert, J.

Inst   :   Photographic Institute, Confederation Technical College,
                 Zurich, Switzerland

Title   :   On the Spectral Sensitivity of Photographic Emulsions

Orig Pub   :   Ann. Phys. (DDR), 1959, 4, No 1-5, 140-144

Abstract   :   The long-wave ($>$490 mμ) "tail" of the light sensitivity
                 of silver bromide crystals, particularly those manufactu-
                 red in the presence of a binder, is due to the occurrence
                 of additional disturbances to the lattice, playing a double
                 role -- they have their own light-absorbing ability and
                 they serve as places of formation of photolytic silver.
                 Connected with these disturbances is a system of local
                 energy levels, lying in the forbidden zone between the

Card 1/2

Abs Jour   :   Ref Zhur Fizika, No 3, 1960, 7509

                 conduction and valence bands. In optical sensitization,
                 the dye and the silver bromide crystal on which it is
                 absorbed should be considered as a single system, and
                 the result of the absorption is also the occurrence of a
                 system of local levels in the intermediate zone. Then
                 the mechanism of optical sensitization can be represented
                 as a process of transfer of an electron to the conduction
                 band, with participation of the newly produced levels.
                 At the same time, the principal difference between the
                 optical and chemical sensitization disappears, since both
                 reduce to the creation of additional levels in the inter-
                 mediate band. The author confirms his ideas by a new
                 review of his earlier papers (principally together with
                 Kleinschrod and Biltz), in particular those pertaining to
                 photoemulsions with direct blackening, and also to the
                 results obtained for silver-bromide photocells (Amsler H.,
                 Z. Electrochem., 1953, 57, 1801).   -- A.L. Kartuzhauskiy

Card 2/2

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7523

Author   : Farsky Vojtech
Inst   : -
Title   : Calculating Procedure in Additive Filtration

Orig Pub   : Jemna mech. a opt., 1959, 4, No 3, 74-77

Abstract   : A method is described for calculating the modulation of
               the light flux in additive printing of film copies, based
               on the analogy of the latter with three-color colorimetry.
               The calculations are similar to ordinary calculations for
               color addition.

Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7524

Author   : Guntermann Siegfried
Inst   : -
Title   : On the Color Temperature and Its Equalization in Color
               Photographs.

Orig Pub   : Bild und Ton, 1959, 12, No 6, 170-172

Abstract   : A system is described of compensation for differences in
               color temperature of the photographic illumination from
               the temperature for which the photographic material is
               designed. Both the color temperature and the compensating
               optical filters are characterized by so called "Mired Units"
               thanks to which all the necessary calculations reduce to
               the addition of two numbers. Values of Mired units are
               given for different illumination conditions in the diffe-
               rent times of the year, and the values of these units for
               several films and light filters made by the Agfa firm are
                              given.   -- D.K. Balabukha
Card 1/1

Abs Jour   : Ref Zhur Fizika, No 3, 1960, 7535

Author   : Grabke Otto

Inst   : VEB Defa Kopierwerke, Berlin, East Germany

Title   : Use of the Debrie "Matipo Color" Copying Apparatus,
               1956 Model, for Additive Printing on Agfa Color Film.

Orig Pub   : Bild und Ton, 1959, 12, No 5, 130-133

Abstract   : The principal features of the so-called additive method of
               mition film printing are described, and the possibility
               is indicated of using the "Matip Color" copying apparatus
               for printing on positives "Agfacolor" film. Optical fil-
               ters are indicated (from the Agfa catalogue) and nomograms
               are given for the changeover from conditional percentages
               of ordinary correction optical filters to the numbers of
               the screenings, used in additive printing as exposure
                                          modulators. -- D.K. Balabukhc

Card 1/1

FIN